

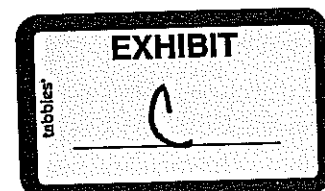
IN THE UNITED STATES DISTRICT COURT FOR THE
NORTHERN DISTRICT OF OKLAHOMA

W.A. DREW EDMONDSON, in his)	
capacity as ATTORNEY GENERAL)	
OF THE STATE OF OKLAHOMA and)	
OKLAHOMA SECRETARY OF THE)	09:01
ENVIRONMENT, C. MILES TOLBERT)	09:01
in his capacity as the)	
TRUSTEE FOR NATURAL RESOURCES)	
FOR THE STATE OF OKLAHOMA,)	
)	
Plaintiff,)	
)	
vs.)	4:05-CV-003290-TCK-SAJ
)	
TYSON FOODS, INC., et al.,)	09:01
)	09:01
Defendants.)	

09:01

VIDEO DEPOSITION OF BARBARA KANNINEN, Ph.D.,
produced as a witness on behalf of the Defendants in
the above styled and numbered cause, taken on the
28th day of April, 2009, in the City of Tulsa,
County of Tulsa, State of Oklahoma, before me, Karla 09:01
E. Barrow, a Certified Shorthand Reporter, duly
certified under and by virtue of the laws of the
State of Oklahoma.

09:01



A P P E A R A N C E S

FOR THE PLAINTIFF: MS. CLAIRE XIDIS

Attorney at Law
28 Bridgeville Boulevard 09:01
Mt. Pleasant, SC 29465 09:01and
MR. DAVID PAGEAttorney at Law
502 West 6th Street
Tulsa, OK 74119

FOR CARGILL: MR. COLIN DEIHL

MR. ERIC J. TRIPLETT
Attorney at Law 09:01
1700 Lincoln Street 09:01
3200 Wells Fargo Center
Denver, CO 80203

FOR GEORGE'S: MS. K.C. TUCKER

(Via Telephone)
Attorney at Law
221 North College
Fayetteville, AR 72701
09:01

FOR SIMMONS: MR. BRUCE FREEMAN 09:01

Attorney at Law
4000 One Williams Center
Tulsa, OK 74172

FOR PETERSON FARMS: MR. CRAIG A. MIRKES

Attorney at Law
320 South Boston
Suite 700
Tulsa, OK 74103 09:01

FOR TYSON: MR. TIMOTHY T. JONES

Legal Counsel
2200 Don Tyson Parkway
Springdale, AR 72762

ALSO PRESENT: MS. LISA KEATING

OnPoint Analytics
DR. GORDON RAUSSER
(Via Telephone) 09:01

VIDEOGRAPHER: MR. DEREK ANDERSON 09:01

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(Whereupon, the deposition began at 9:07 a.m.)

VIDEOGRAPHER: We are now on the record for the deposition of Dr. Barbara Kanninen. Today is April 28th, 2009. The time is 9:04 a.m. Will counsel please identify yourselves for the record? 09:07

MS. XIDIS: Claire Xidis for the State of Oklahoma.

MR. FREEMAN: Bruce Freeman for Simmons Foods. 09:08

MR. DEIHL: Colin Deihl for Cargill.

MR. TRIPLETT: Eric Triplett for Cargill.

MR. JONES: Tim Jones for Tyson Foods.

MR. MIRKES: Craig Mirkes for Peterson Farms. 09:08

MS. KEATING: Lisa Keating for OnPoint Analytics.

VIDEOGRAPHER: And on the phone, please?

MS. TUCKER: K.C. Tucker for the George's defendants. 09:08

MS. XIDIS: And we also have on the phone, I believe, Gordon Rausser; is that correct? He was on earlier. I don't know.

VIDEOGRAPHER: You may swear in the witness. 09:08

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I N D E X

WITNESS PAGE

BARBARA KANNINEN, Ph.D.

Direct Examination by Mr. Deihl 5 09:01

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09:01

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BARBARA KANNINEN, Ph.D.,

being first duly sworn to tell the truth, the whole truth and nothing but the truth, testified as follows:

DIRECT EXAMINATION 09:08

BY MR. DEIHL:

Q Please state your name for the record.

A Barbara Joan Kanninen.

Q What is your home and work addresses, please?

A My home address is 4946 Rock Spring Road, Arlington, Virginia, 22207, and phone, did you say? 09:08

Q No, your work address, please.

A Work address 4946 Rock Spring Road, Arlington Virginia 22207.

Q And what is your home phone number, please? 09:09

A 703-536-6949.

Q How about your work phone number?

A 703-536-6949.

Q And do you have an E-mail address?

A I have two E-mail addresses. 09:09

Q What are those?

A BarbKann, B-A-R-B-K-A-N-N@Verizon.net, and Barbara@BarbaraKanninen.com.

Q What is your date of birth?

A June 21st, 1963. 09:09

5

1	Q Have you ever been deposed before?	plaintiffs in this case.
2	A No.	A We looked through the report and talked about
3	Q Did you prepare for this deposition today?	the parts of the report that I contributed to, and
4	A Yes.	talked about how that process went and what types of
5	Q What did you do to prepare for the deposition? 09:09	things I was involved with. 09:12
6	A I read David Chapman's deposition transcript.	Q Have you ever testified before in a court
7	I read Roger Tourangeau's transcript. I reread our	proceeding?
8	report. I looked over some of my considered	A No.
9	materials that were turned over and my billing	Q Have you ever been retained as an expert
10	records, and I met with Claire and Ingrid yesterday. 09:10	witness in any litigation? 09:12
11	Q How long did you meet with Claire and Ingrid	A No.
12	yesterday?	Q Before this case?
13	A I think, including lunch, it was probably	A No.
14	about five hours.	Q Dr. Kanninen, I've handed you what's been
15	Q What did you do during that meeting? 09:10	marked as Deposition Exhibit No. 1, which I believe 09:13
16	A We talked about protocol, what to expect. We	is a current copy of your CV; is that correct?
17	went over the things that I worked on in the	A Yes.
18	project, and talked about how today would go.	Q You have a Ph.D. from the University of
19	Q And you say you talked about protocol. What	California at Berkeley; is that correct?
20	did you talk about? 09:10	A Yes. 09:14
21	A Everything from where I would sit to where you	Q Did you work with any particular professors
22	would sit, to the fact that there's a videographer	when you were receiving your Ph.D. at Berkeley?
23	here. Just the details of the day, since I haven't	A Work with in what sense?
24	done this before.	Q Well, in other words, was there a professor
25	Q And what did they tell you about what to 09:11	who supervised your thesis? 09:14
	6	8
1	expect here today?	A I had a main supervisor, and two other
2	A They told me that I would be asked questions,	professors on my thesis committee.
3	and that if they felt -- they told me about the type	Q Who were they?
4	of objections they might make if they felt the	A Michael Hanemann was my primary advisor, and
5	questions were -- had issues with them, that sort of 09:11	the two other advisors were Paul Ruud in the 09:14
6	thing.	department of economics, and Peter Berk.
7	Q Are you on any sort of medications that would	Q And Michael Hanemann, who was your principal
8	prevent you from properly testifying here today?	advisor, he's the same Michael Hanemann who is
9	A No.	serving as an expert for Stratus in this case; is
10	Q Do you understand that the court reporter is 09:11	that correct? 09:14
11	taking down my questions and your answers to those	A That's correct.
12	questions?	Q You indicate on your --
13	A Yes.	A I apologize, it was Jeffrey Purloff who was on
14	Q And I would ask you to wait for me to finish a	that committee, not Peter Berk. It was a while ago.
15	question before you answer that question because the 09:11	I forgot. 09:15
16	court reporter can't take down both of us talking at	Q You indicate that you have edited a
17	once; is that fair?	professional book on environmental valuation. What
18	A Yes.	book did you edit?
19	Q I'd also ask you to please provide verbal	A That is listed at the bottom of my vita under
20	responses because head nods are difficult for the 09:12	books. 09:15
21	court reporter to record as well; is that fair?	Q Okay.
22	A Yes.	A It's calling Valuing Environmental Amenities
23	Q Besides talking about protocol and what to	Using Choice Experiments, a Common Sense Guide to
24	expect, describe for me what sorts of things you	Theory and Practice.
25	went over yesterday with the attorneys for the 09:12	Q Besides this case, what other contingent 09:15
	7	9

1 **valuation surveys have you been involved in?**
 2 A I have been involved in nine or 10 valuation
 3 studies over the course of my career.
 4 **Q Okay.**
 5 A Do you want me to — 09:16
 6 **Q Well, let me ask you a follow-up question. I**
 7 **asked you what other contingent valuation surveys**
 8 **have you been involved in, and you indicated you've**
 9 **been involved in nine or 10 valuation studies. Are**
 10 **all of those nine or 10 valuation studies contingent** 09:16
 11 **valuation studies?**
 12 A The studies I've been involved with, some have
 13 been specifically contingent valuation, others have
 14 been what is the broader approach to nonmarket
 15 valuation, which is called state of preference 09:16
 16 models or conjoint analysis.
 17 **Q Okay. Out of those nine or 10 valuation**
 18 **studies, how many of them were contingent valuation**
 19 **studies?**
 20 A I think, counting the current study, probably 09:16
 21 five.
 22 **Q Tell me what those were, please.**
 23 A I did a study for the Army Corps of Engineers
 24 about the Louisiana wetlands. I should say I was a
 25 participant. In most of these studies I was a 09:17
 10

1 participant, I was not — most studies are not done
 2 by one person. I worked on a study of the San
 3 Joaquin Valley in valuing different wetlands,
 4 maintenance improvement programs in the San Joaquin
 5 Valley. I participated a little bit with the Exxon 09:17
 6 Valdez oil spill study. There was one other study
 7 that I did after the Louisiana study, I apologize, I
 8 don't remember the topic, and this study.
 9 **Q When was the Louisiana study conducted?**
 10 A Probably around 1985. I don't remember the 09:18
 11 exact year.
 12 **Q That was before you'd received your Ph.D.; is**
 13 **that correct?**
 14 A Yes.
 15 **Q What was your involvement in the Louisiana** 09:18
 16 **study?**
 17 A I was the primary research assistant, so I
 18 believe I did everything from administering the
 19 mailing of the survey to receiving the data —
 20 receiving the surveys back, coding the data, and 09:18
 21 running the analysis.
 22 **Q Who were you working for on that survey?**
 23 A It was a professor at Texas A&M University
 24 named John Stoll.
 25 **Q What about the San Joaquin study, when was** 09:18
 11

that conducted, approximately?
 A That was probably conducted in about 1987 or
 1988, maybe 1989. I'm not sure.
Q And who did you work for on that study?
 A The professors who worked on that study were 09:19
 Michael Hanemann and John Loomis. He was, at the
 time, at the University of California Davis.
Q Were you a student at the University of
California Berkeley during that study?
 A Yes. 09:19
Q What about the Exxon Valdez study, when did
you work on that study?
 A I worked on that only during the part of the
 process that occurred before I left Berkeley and
 started my first job at the University of Minnesota, 09:19
 so it was before — I believe it was about the time
 they were pretesting the survey and we were looking
 at the pretest data. It was before the final study.
Q And who did you work for on that survey?
 A There were seven or eight principals on that 09:20
 survey, as I recall.
Q Was Dr. Hanemann one of the principals?
 A Dr. Hanemann was one, Dr. Richard Carson, Paul
 Ruud, I believe Robert Mitchell.
Q This one other study that you can't recall 09:20
 12

what it was about, do you recall when it occurred?
 A Yes. Actually, that study, I mostly did the
 beginning part of it, which I guess is why I don't
 remember it very well. I — it was a study that I
 helped with the survey administration on, again, 09:20
 getting the survey into the field, that part of the
 process, and then I received my master's degree and
 left Texas A&M at that point, so I did not work on
 the other end of that study, the data analysis part.
Q So if I've heard you correctly, you have 09:21
worked on these four other contingent valuation
studies, and all of these studies were conducted
back in the 1980s before you received your Ph.D.
from the University of California at Berkeley; would
that be correct? 09:21
 A The studies we've discussed, yes.
Q Yes. And those are the only other contingent
valuation studies you have worked on other than this
one; correct?
 A Yes. I've worked on a number of choice 09:21
 studies, but contingent valuation, those are them.
Q And I understand you indicated you've worked
on some other stated preference studies, but these
are the only contingent valuation studies; correct?
 A Specifically contingent valuation, yes. 09:21
 13

1 **Q Have you done any other work for Stratus**
2 **Consulting other than this project?**
3 A Prior to this project, I had not done any work
4 for Stratus. I am currently working on another
5 project with them. 09:22
6 **Q What is the other project that you are**
7 **currently working?**
8 A It is a project funded by NOAA, The National
9 Oceanic & Atmospheric Administration, and the
10 project is to assess willingness to pay for the 09:22
11 Hawaiian coral reefs.
12 **Q What is your involvement in this project on**
13 **the Hawaiian coral reefs, what have you been asked**
14 **to do?**
15 A The first thing I was asked to do was to work 09:23
16 on the experimental design. That survey is now in
17 the field, so once it is back, I will be working on
18 the data analysis. But so far, I have -- my
19 participation has been on the experimental design.
20 **Q What do you mean by experimental design?** 09:23
21 A In choice studies, as with contingent
22 valuation, the -- there are generally a set of
23 questions about that ask people their willingness to
24 pay for certain goods. In the case of the coral
25 reef, we are trying to assess the value of certain 09:23

14

1 protection programs, a variety of programs. And so
2 experimental design looks at the question of how do
3 we have to vary the attributes of those programs to
4 the different respondents so that we can estimate
5 their willingness to pay for the different 09:24
6 attributes at the end of the process.
7 **Q Are any of the other Stratus consultants who**
8 **are working on this project also working on the**
9 **Hawaiian project?**
10 A What do you mean by Stratus consultants? 09:24
11 **Q Well, there are, I believe, seven authors of**
12 **the report in this case. Are any of those authors**
13 **also working on the Hawaiian island program?**
14 A David Chapman and Dr. Bishop.
15 **Q Anyone else?** 09:24
16 A I do not -- I think Roger Tourangeau has been
17 involved in a small way on maybe some of the
18 sampling issues, but I haven't had any meetings with
19 him or seen his involvement directly.
20 **Q Did you know David Chapman before you were** 09:25
21 **hired in connection with this matter?**
22 A Yes.
23 **Q How did you know him?**
24 A David and I were both graduate students at the
25 same time at Berkeley, and after I graduated, I 09:25

15

first worked at the University of Minnesota, but
then I moved to the DC area and worked at NOAA, and
David had also taken a job at NOAA, so we worked in
the same office for a year. And he's a professional
colleague that I've kept in touch with over time. 09:25

Q When you both worked in the same office at
NOAA, what office did you work in?

A It was called the damage assessment center.

Q Did you work together on projects in that
office? 09:26

A No.

Q What was the function of the damage assessment
center?

A The primary function of the damage assessment
center, which was not my job, but the function, I 09:26
believe, was to pursue pollution cases of different
types on behalf of the government, on behalf of the
federal government.

Q And what was your job in connection with that?

A My job that year was to help with the 09:26
development of the regulations for Natural Resource
Damage Assessment under the Oil Pollution Act.

Q And what was David Chapman's job?

A I believe he had cases, but I didn't work with
him so I don't know for sure. 09:27

16

Q When you say he had cases, what do you mean?

A I'm sorry, I think that he managed some of the
cases, the damage assessment cases for the
government.

Q When you say the damage assessment cases, you 09:27
mean the cases that NOAA was bringing?

A Yes.

Q Let's talk a little bit about your time at the
University of Minnesota. Your CV indicates that you
were an assistant professor and you taught 09:27
environmental and transportation policies; is that
accurate?

A Yes. And part of my position was a research
only appointment.

Q What research did you do while you were at the 09:27
University of Minnesota?

A That was directly after I had received my
Ph.D., and typically, what an assistant professor
fresh out of a Ph.D. program does is work on the
research they did for their dissertation and try to 09:28
get it published in peer reviewed journals, so I
primarily focused on my dissertation research.

Q What was your dissertation research?

A It was on optimal design for contingent
valuation studies. 09:28

17

<p>1 Q Did you get it published?</p> <p>2 A I published -- I believe I published two</p> <p>3 papers directly that came out of the direct research</p> <p>4 I had done for my dissertation, and then I also</p> <p>5 pursued other lines of research that culminated in 09:28</p> <p>6 publications, as well.</p> <p>7 Q What did you do while you were at the</p> <p>8 Resources for the Future in Washington, DC?</p> <p>9 A I was awarded the Gilbert White fellowship,</p> <p>10 which is a prestigious fellowship that allows a 09:29</p> <p>11 researcher, often a young researcher, to spend a</p> <p>12 year at Resources for the Future, which is an</p> <p>13 academic research institute in Washington, DC, and I</p> <p>14 had proposed -- to apply for the fellowship, you</p> <p>15 propose a project, so I had proposed a project that 09:29</p> <p>16 considered the aspects of intelligent transportation</p> <p>17 systems, which was a new concept at the time, and to</p> <p>18 look at the benefits and costs of those systems.</p> <p>19 That was a -- transportation was an interest I had</p> <p>20 developed. Some of the transportation demand models 09:29</p> <p>21 are very similar to those that we use in contingent</p> <p>22 valuation, and so it was kind of a natural extension</p> <p>23 of some of my research. And I also, while there,</p> <p>24 worked on some research about contingent valuation</p> <p>25 and different modeling approaches. 09:30</p> <p style="text-align: center;">18</p>	<p>Science Foundation to work on the issue of designing</p> <p>choice experiments for use with nonmarket valuation.</p> <p>The choice experiments came from the marketing</p> <p>literature and hadn't been fully implemented, I</p> <p>think, in the environmental economic literature at 09:32</p> <p>the time, so I synthesized those literatures and</p> <p>found ways to improve the approaches in the</p> <p>marketing literature for use of nonmarket valuation.</p> <p>Q If I'm understanding you correctly, when you</p> <p>say the market literature, what are you referring 09:32</p> <p>to?</p> <p>A The marketing literature is -- generally</p> <p>marketing is part of the business school, and</p> <p>marketing uses the same procedures that we use,</p> <p>surveys, or in person studies where you try to get 09:33</p> <p>information about people's preferences for certain</p> <p>goods. Often in the case of marketing, they're</p> <p>talking about potential goods that a company may be</p> <p>considering putting on the market. We're, in our</p> <p>literature, generally talking about environmental 09:33</p> <p>goods.</p> <p>Q So you looked at that marketing literature and</p> <p>translated it into environmental contingent</p> <p>valuation studies; is that a fair summary?</p> <p>A No, I don't think the marketing literature 09:33</p> <p style="text-align: center;">20</p>
<p>1 Q Tell me about the research you worked on on</p> <p>2 contingent valuation while at Resources for the</p> <p>3 Future.</p> <p>4 A I worked primarily with Anna Alberini, who was</p> <p>5 a well regarded contingent valuation economist, and 09:30</p> <p>6 she and I collected a number of continuation</p> <p>7 valuation datasets and estimated different types of</p> <p>8 model specifications.</p> <p>9 Q Anything else?</p> <p>10 A In that year? 09:31</p> <p>11 Q Yes.</p> <p>12 A No. I think that year resulted in the</p> <p>13 publication of two peer reviewed papers, so that's</p> <p>14 probably about what I did that year.</p> <p>15 Q Your CV indicates that you -- strike that. 09:31</p> <p>16 Your CV indicates that after you left NOAA, you went</p> <p>17 back to the University of Minnesota from '96 to</p> <p>18 approximately 2003; that's correct?</p> <p>19 A I was employed by the University of Minnesota</p> <p>20 for those years. 09:31</p> <p>21 Q And it indicates you were the principal</p> <p>22 investigator on research to improve the design of</p> <p>23 stated choice experiments. Tell me about that.</p> <p>24 What did you do?</p> <p>25 A I had received a grant from the National 09:31</p> <p style="text-align: center;">19</p>	<p>needed translation. I do think that they don't</p> <p>consider as many options as we consider in the</p> <p>environmental literature. In particular, they tend</p> <p>to assume that when they're doing a study, the</p> <p>levels, for example, prices, are going to be somehow 09:34</p> <p>fixed before they think about doing their study.</p> <p>They already know what prices they want to consider.</p> <p>In our literature, we tend -- the question of which</p> <p>levels to use is an experimental design question.</p> <p>So I took what they had done and expanded it to a 09:34</p> <p>larger set of questions that were more applicable to</p> <p>our literature, but then I proceeded to publish that</p> <p>work in the marketing literature.</p> <p>Q Now, we talked about your work with Dr.</p> <p>Hanemann and we talked about the fact that you were 09:34</p> <p>a graduate student with David Chapman and worked</p> <p>with David Chapman at NOAA. Prior to this study,</p> <p>had you worked with any of the other Stratus</p> <p>authors?</p> <p>A I was on a peer review panel for the National 09:35</p> <p>Science Foundation with Jon Krosnick. Are you</p> <p>asking if I worked directly with any of them or if I</p> <p>knew them?</p> <p>Q I'm asking if you worked with them.</p> <p>A I think that's it. 09:35</p> <p style="text-align: center;">21</p>

1	Q Tell me how you were approached about working on this matter.		MR. DEIHL: Could you read back the question?	
2			(Whereupon, the court reporter read back the previous question.)	
3	A I believe I got a phone call from David Chapman.		A So I was at the point of knowing what the goals are of the research project, both statistical and any other guidelines involved in what you're trying to do. Then I would look at pretest data. Assess whether the pretest data is thought to be a good indication of the type of information that's going to be collected in the final, in other words, how close is the wording of the pretest data to the wording of what they're expecting to do with the final. How certain do we feel that it's the same survey. And then I look at that data and determine what I think would be the best bid design to fit what appears to be the willingness to pay distribution, given the information I have so far.	09:40
4				
5	Q And what did he ask you — what did he tell you?	09:36	Q (By Mr. Deihl) You said when you're looking at the goal of the study, you want to get a good sense of the bulk of the willingness to pay, but not necessarily trace out the tails. Why is that?	09:40
6			A Well, the statistical reason is that it is very difficult to estimate tails data well. If you think of an experiment where you're flipping a coin.	09:41
7	A When he first called, I believe he asked if I would like to help with the experimental design for a contingent valuation study.			
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9				
10	Q What did you understand that to mean?	09:36		
11	A That I would probably be shown some pretest data, and his interest was in getting my recommendation for what they should use for a bid design.			
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15	Q Now, you talked a little bit earlier that at the University of Minnesota, you spent some time looking at marketing materials regarding bid design and looking at how bid designs were conducted in the environmental area. Tell me, if you would, what you do to come up with a proper bid design for a contingent valuation survey.	09:36		
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21				
22	A The procedure for thinking about bid design, in my opinion, is to start by determining what the goal is of the study. So, for example, generally with nonmarket valuation studies, the interest is in	09:37		
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25				
	22		24	
1	estimating willingness to pay. And what one wants to look at is how is that going to be estimated, what type of estimator are you going to use. Are you going to use a parametric estimator or a nonparametric estimator, for example, and which type, and what about the estimator are you most interested in.	09:38	You may only have to flip a coin 20 times and you'll get a pretty good estimate of the fact that the outcome is 50/50. But if you're going to do an experiment where, say, you have a hat with one piece of black paper and 19 pieces of white paper, so the possibility is one out of 20 that you're ever going to pull out that black, you'd probably have to do a couple of hundred experiments of drawing before you're going to get a good estimate of that 5 percent that represents that black piece of paper. So it's very — it's statistically cumbersome to estimate tails data well. So generally, in my peer reviewed papers where I discuss the theory of optimal design, I have always recommended that researchers avoid anything in the tails of the distribution. I've generally said anything outside the 15 percent percentiles. Does that answer —	09:41
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8	In the case of this study, I learned early on that it was important, for example, to follow the NOAA panel guidelines, which are to generally take a conservative approach, which to me meant that the interest on the part of the researchers was to get a very good sense of the bulk of the willingness to pay distribution, the main part of the willingness to pay distribution, but not necessarily to try to trace out the full willingness to pay distribution. It, in fact, takes a lot of observations to estimate values that are in the tails of the distribution well.	09:38		
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20	So in — so in thinking about design, I would think about what the goals are of the study, both the statistical goals and, like I said, goals in terms of guidelines, and the sense of what the researchers are trying to accomplish. Then I — then could you remind me of what the question is?	09:39	Q And I've read your literature where you've said that. How do you know if you're in the 15 percent of the tail if you don't spend the time to trace out what the tail looks like?	09:42
21			A When you design the study, you don't know exactly what your outcome is going to be because obviously, that's what you're trying to obtain information about. But if you have good pretest	09:42
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23				
24				
25				
	23		25	

1 data, you can look at that and see which percentages 2 you're getting back. You may or may not get the 3 exact 15 percentile, but if you're somewhere -- if 4 you have information around there, you will know 5 that you don't want, for example, to go above 09:43 6 whatever point it was that got a 15 percent 7 response. 8 Q So I take it the goal in this pretest period 9 is to try to determine where the tails lie and so 10 that you can design a base survey so that you're 09:43 11 focused on the middle of the -- 12 A Yeah, I did -- 13 MS. XIDIS: Object to the form. 14 A I'm sorry. Did you finish? I'm sorry. 15 Q (By Mr. Deihl) I did finish. 09:43 16 A I would not say that the goal is to learn 17 about the tails. The goal is to generally learn 18 about the main part of the distribution. My point 19 in my papers has been to say there is -- it is not 20 particularly helpful to researchers to pursue 09:43 21 information in the tails, but the main goal is 22 generally to get information about the middle part 23 of the distribution. 24 Q How do you know that you're getting 25 information about the middle part of the 09:44 26	already collected. You would also want to think about whether or not you've made any major changes in your survey between the point of collecting that data and the next round. So you wouldn't necessarily want to replicate what you've done 09:45 specifically because you may have changed things, and then you would want to think about how that may affect. Q You were first contacted in connection with this matter in approximately August of 2008; isn't 09:45 that correct? A Yes. Q Dr. Kanninen, I've handed you what's been marked for purposes of identification as Deposition Exhibit No. 2. Can you identify this E-mail? 09:46 A I do not know who Janice Sullivan is. Q I'll tell you Janice Sullivan is someone in my office who printed E-mail off. That's all she is. A So, I'm sorry, what was the question? Q Let me rephrase the question. Is this an 09:47 E-mail from -- at least the top E-mail in this chain, an E-mail from you to David Chapman dated August 12th, 2008? A Yes, it appears that he sent it on August 11th, and I responded on August 12th, 2008. 09:47 28
1 distribution when you're conducting these pretest 2 surveys? 3 A At the point of the pretest, depending on 4 where you are in the pretest process, if you have -- 5 you basically at every stage of survey design look 09:44 6 at the data you have in hand. So if you're doing a 7 pretest, if you have already done pretesting, you 8 can look at that information. If you have not done 9 any pretesting yet, you go with what you have 10 learned. I know in this process, and I wasn't 09:44 11 involved at this point, but my understanding is in 12 this process, there was a very thorough and lengthy 13 set of investigations first with focus groups, which 14 are generally informal, and where you might not even 15 worry about a bid design, you might be collecting 09:44 16 information from the focus-group respondents, and 17 then formulating some opinions about what they might 18 be willing to pay and going from there. So it's a 19 process of taking the information you have collected 20 already and using it to inform the next stage of the 09:45 21 process. 22 Q And I take it it would be important to 23 consider the data you've already collected in 24 formulating the next stage of the process? 25 A You would generally look at the data you have 09:45 27	Q Okay. And in the E-mail to you, he writes, I hope your summer is going well. Hollis and I have been way too busy. We're trying to find fun when we can. Are you coming out for the convention? What convention was he referring to? 09:47 A That was the Democratic National Convention in Denver. Q And then he's asking you if you have some time to help out on the CV bid design issues? A On some CV bid design issues, yes. 09:47 Q And you indicated that you did have some time to help him in the response E-mail; correct? A I indicated that I had time before August 23rd and then after September 2nd. Q Okay. Did you go to the Democratic National 09:48 Convention? A Yes. Q How did you like Denver? A It's a wonderful town. Q Did you meet Mr. Chapman at the convention? 09:48 A No, I did not. Q Did you meet any of the other Stratus experts at the convention? A No, I did not. Q Did you have any work -- did you do any work 09:48 29

<p>1 on the -- on this matter while you were attending 2 the Democratic National Convention? 3 A No. 4 Q Okay. So you just had fun while you were in 5 Denver? 09:48 6 A Yes. 7 Q Were you a delegate to the Democratic National 8 Convention? 9 A My husband was on the credentials committee 10 for the State of Virginia. 09:48 11 Q In the E-mail that you sent back to Mr. 12 Chapman, you indicate, did you ever do that updating 13 of the last design? What are you referring to when 14 you refer to the last design? 15 A At the point of this E-mail, I had probably 09:49 16 not corresponded or spoken to David for about six 17 months, I'm guessing. Not six months. I probably 18 saw him in the spring of that year, and at that 19 time, he said he was working on some projects and 20 might like my help with bid design on them. I 09:49 21 don't -- he did not say which projects. And so I 22 think I was asking him if he had done the project 23 that he was asking me about that I hadn't heard from 24 him on. 25 Q Dr. Kanninen, I've handed you what's been 09:49 30</p>	<p>August 20th, you hadn't received that material yet; is that right? A Apparently so, yes. Q I've handed you what's been marked for purposes of identification as Deposition Exhibit No. 09:52 4, which is an E-mail from Megan Lawson to you dated August 20th, 2008, in which she seems to be sending you the stuff that you were referring to in the prior E-mail; is that correct? A That's what -- yes, that appears to be the 09:53 case. Q And what did Ms. Lawson send you? A She sent me some data and some estimation results from two different pretests they did. One was a focus group that appears to be dated July 09:54 31st, and one was called a pilot study. Q And you said she also sent you some willingness to pay estimates; is that correct? A She -- it appears she estimated a willingness to pay model with the focus group data and the pilot 09:55 data, yes. Q The E-mail that she sent you indicated that David had already spoken to you about the materials that she was sending to you. What was your understanding of why you were being sent these 09:55 32</p>
<p>1 marked as Deposition Exhibit No. 3, which is another 2 series of E-mails, the top one dated August 20th, 3 2008 from David Chapman to you. Between the time 4 that you exchanged E-mail correspondence with David 5 Chapman, as reflected in Deposition Exhibit 2, and 09:50 6 the time that this E-mail was sent as reflected in 7 Deposition Exhibit 3, had you had any conversations 8 with Mr. Chapman? 9 A Between this E-mail and -- Exhibit 2 and 10 Exhibit 3, did we -- did we talk on the phone? 09:51 11 Q Yes. 12 A Between the exchange of these E-mails? I 13 don't remember a conversation, but we must have 14 because if I asked him if you send the stuff, I must 15 have known what stuff I was referring to. 09:51 16 Q What -- in the E-mail that you sent to Mr. 17 Chapman on August 20th in the morning when you're 18 saying did you send the stuff, what stuff were you 19 asking for? 20 A That's what I'm saying. I would assume that 09:51 21 we had a phone conversation where he told me he 22 would be sending me some material to help me do the 23 job he was asking me to do, and it probably was the 24 pretest material, but I don't remember for sure. 25 Q Okay. But it appears that as of, you know, 09:51 31</p>	<p>materials and what you were being asked to do with them? A At this point? Q Yes. A My understanding was that they were interested 09:55 in my expertise on bid design and my recommendation for what they might want to use for a final bid design for their study. Q And the materials that you were sent by Ms. Lawson, how did the materials help you in reaching a 09:56 conclusion about proper bid design in this case? A Basically, they gave me a sense of what it appeared the willingness to pay distribution looked like, given the limited number of observations they had, and at that point, I didn't know much about the 09:57 specifics of the study so I wasn't necessarily able to judge whether this information -- whether they felt this information was the same type of information they would be collecting in the final version of the survey, but I used this information 09:57 to develop a proposal based purely on the statistical responses I found. Q So you used this data to develop a proposal based on the statistical responses you found in this data? 09:57 33</p>

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	<p>A Yes.</p> <p>Q Now, this E-mail is dated August 20th, 2008. If my recollection is correct, the Democratic National Convention ran from August 25th to August 28th, 2008; does that -- 09:58</p> <p>A That's approximately right.</p> <p>Q -- sound about right?</p> <p>A Uh-huh.</p> <p>Q Did you stay over the Labor Day weekend in Denver? 09:58</p> <p>A No.</p> <p>Q Okay. So when did you fly back?</p> <p>A I flew back in two stages. I flew to pick up my kids, who were staying with my parents in San Antonio, Texas, probably on Saturday, the day after the convention ended, and then flew back home on Sunday to get them ready for school on Tuesday. 09:58</p> <p>Q Sounds like a handful. When did you come out to the convention?</p> <p>A The same type of schedule. I flew -- I flew my children to my parents' house first, so I believe I arrived -- it may have been -- I probably arrived the day before the official convention began because that was the day of the credentials committee when my husband was involved. 09:59</p> <p style="text-align: center;">34</p>	<p>A Yes.</p> <p>Q (By Mr. Deihl) How many days did you spend in San Antonio?</p> <p>A One day.</p> <p>Q So you would have spent the 23rd in San Antonio? 10:00</p> <p>A I don't remember the exact dates.</p> <p>Q Okay. You would have travel records that would reflect this trip that you took to the DNC, would you not? 10:00</p> <p>MS. XIDIS: Objection to form.</p> <p>A That was a personal trip. I don't save records for personal trips.</p> <p>Q Okay. What was your husband's role? 10:00</p> <p>MS. XIDIS: Objection.</p> <p>Q (By Mr. Deihl) In the convention?</p> <p>MS. XIDIS: This is completely outside the scope of relevance here.</p> <p>MR. DEIHL: If you're going to instruct the witness not to answer, that's fine, but I'm asking her these questions. 10:00</p> <p>MS. XIDIS: Well, first of all, she's already told you, so it's been asked and answered. Secondly, you're going on this complete line of questioning that's completely outside the bounds of 10:01</p> <p style="text-align: center;">36</p>
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	<p>Q The official convention began on August 25th, so you would have arrived about August 24th, in that --</p> <p>MS. XIDIS: I'll object to this line of questioning. Detailed travels are personal matters that I think are outside the scope of what we need to address. 09:59</p> <p>MR. DEIHL: I think this is highly relevant to what this witness did leading up to the bid design. 09:59</p> <p>Q (By Mr. Deihl) You can go ahead and answer the question.</p> <p>A What was the question?</p> <p>Q The question was, the convention began on August 25th, and if I heard you correctly, you arrived in Denver on August 24th. That would have been the day before the convention. 09:59</p> <p>A That is probably the case.</p> <p>Q And prior to that, you had flown to San Antonio to drop off your kids in San Antonio; correct? 10:00</p> <p>A Yes.</p> <p>Q Did you spend a day in San Antonio with your parents?</p> <p>MS. XIDIS: Objection. 10:00</p> <p style="text-align: center;">35</p>	<p>what's at issue in this case and in this deposition. I'm going to instruct her not to answer.</p> <p>MR. DEIHL: Okay. I'll take it up with the judge. I think it's very relevant what this witness was doing between August 20th and the 2nd of September because this witness had a mere 12 days to look at this material and put together a bid design. And what this witness was doing during those 12 days is critical to an understanding of what occurred here in this matter, and I think I'm entitled to ask this witness what she was doing at the Democratic National Convention, what work she was doing during that period, and what conclusions she reached. But if you're instructing her not to answer, then -- 10:01</p> <p>MS. XIDIS: You asked questions about her husband's role in a convention, which is completely different than what you're saying entitled to. Why don't you ask how much time she spent on the issue related to this case. I think that's a proper question. 10:01</p> <p>MR. DEIHL: I asked her if she had travel records, and she indicated she didn't because it was personal. So now I'm trying to find out if her husband has travel records because it may not have been personal for him. I think it's a completely 10:02</p> <p style="text-align: center;">37</p>

valid question.

MS. XIDIS: You don't have to answer that question. Do not answer that question. I think you can get the information you need a different way.

Q (By Mr. Deihl) You've already indicated you didn't do any work on this matter while you were attending the Democratic National Convention. Tell me what you did after you received these materials on August 20th until the final bid design was completed. 10:02

MS. XIDIS: Objection to form.

A I'm sorry, yeah, could you ask – could you repeat the question?

Q (By Mr. Deihl) Strike that. I'll ask it again. 10:02

MR. DEIHL: Could I have that marked, please?

Q (By Mr. Deihl) Dr. Kanninen, I've handed you what's been marked as Deposition Exhibit No. 5, which is an E-mail from David Chapman to you dated August 28th, 2008, indicating the subject line is, you have been approved. Was it your understanding, based on this E-mail, that you had been approved to work on this project? 10:03

A That subject line was never explained to me. 10:03

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I would guess that this was the point where I was sent a contract, so I probably assumed that's what it meant, but it wasn't explained to me.

Q Did you have a phone call with Mr. Chapman following this E-mail? 10:04

A When people ask me to call, I do, yes.

Q Okay. Do you recall what you talked with him about?

A No, I do not.

Q This E-mail was sent to you during the Democratic National Convention; correct? 10:04

A Yes, if the dates are as you indicated. I don't remember for sure, but –

MR. DEIHL: Why don't we take a moment. I think we need a tape change here. 10:04

VIDEOGRAPHER: We're off the record at 10:01 a.m.

(Following a short recess at 10:04 a.m., proceedings continued on the record at 10:11 a.m.)

VIDEOGRAPHER: We are back on the record, 10:11

Q (By Mr. Deihl) Dr. Kanninen, prior to the break, we were looking at what's been marked as Deposition Exhibit No. 4, which are the materials that Megan Lawson sent to you on or about August 10:11

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20th, 2008. Did you review any other materials in connection with your work on the bid design in this study prior to September 3rd, 2008?

A No. These are the materials that I had in hand. 10:12

Q Dr. Kanninen, I've handed you what's been marked for purposes of identification Deposition Exhibit 6, which is an E-mail from you to Colleen Donovan with an attached invoice. Do you have that in front of you? 10:13

A Yes.

Q And this is the first invoice that I found in your considered materials for time you spent on this project; does that match your recollection?

A Yes. 10:13

Q And this invoice indicates that you billed 5.25 hours between August 31st and September 3rd on development of experimental design; is that correct?

A Yes.

Q What did you do during those 5.25 hours that you developed the experimental design, if you can recall? 10:13

A I would say about two hours of that time was spent on a conference call with the team, which would mean that about three-and-a-quarter hours was 10:13

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time I spent reviewing these materials thinking through the process of bid design.

Q Based on this invoice, is it fair to say that you didn't begin working in earnest on this project until September of 2008? 10:14

MS. XIDIS: Objection to the form.

A Based on – could you repeat the question?

Q (By Mr. Deihl) Based on your time entries in this invoice, which indicate you started working on the project on August 31st, 2008, is it fair to say that you didn't begin working on this project in earnest until September of 2008? 10:14

MS. XIDIS: Objection to form.

A I think it's fair to say that I started on the project on August 31st, 2008. 10:14

Q (By Mr. Deihl) What occurred on August 31st, 2008, do you know?

A That is probably the day that I looked at the materials Megan Lawson sent me.

Q You describe a telephone call that you had with the team sometime during this period. Do you know when that occurred? 10:15

A I don't recall for sure.

Q Were you involved in the bid design on the Exxon Valdez study? 10:15

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<p>1 A I was not involved with the Exxon Valdez study 2 at the point when they finalized the bid design they 3 used, but I was involved in preliminary discussions 4 during the pretest stage in talking about this one. 5 Q Do you recall what the highest bid that was 10:15 6 used on the Exxon Valdez study was? 7 A I do not recall specifically, no. 8 Q Do you recall generally what it was? 9 A No. 10 Q Dr. Kanninen, I've handed you what's been 10:16 11 marked as Deposition Exhibit No. 7, which is another 12 E-mail dated Wednesday, September 3rd, 2008. This 13 is an E-mail from David Chapman to the team, and it 14 indicates, here is what we have decided on bids; do 15 you see that? 10:17 16 A Yes. 17 Q How were these bid numbers chosen? 18 A These bids were finalized during the 19 conference call that I referred to. 20 Q Who was on that conference call? 10:17 21 A At that point, I was not familiar with the 22 members of the team so I do not know for sure. 23 Q Okay. Describe to me the conversation that 24 occurred during that conference call and how the 25 team decided on these bid numbers. 10:17 42 </p>	<p>get a good estimate of that percentage vote, and I thought six bids would — because of — because early on they had decided they wanted to take the conservative approach of using a lower bound estimator for willingness to pay, I felt it was very 10:20 important to try to collect as many bids as possible, given the statistical efficiency constraints, and so six was the most I felt they could collect and still obtain a decent amount of statistical efficiency. 10:20 Q When you talk about statistical efficiency, explain to me what you mean by that. A Keeping variants -- the variants of your estimator as small as possible. Q At this point in time when you had this 10:20 telephone call with the team, you had only reviewed the materials that were attached to Deposition Exhibit No. 4; correct? A I believe that's correct, yes. Q You hadn't reviewed any other pretest data 10:21 other than that information; right? A That's correct, and I was brought into the conversation as someone who was bringing my expertise as a bid designer. The rest of the team was bringing that collective memory about the other 10:21 44 </p>
<p>1 A At the beginning of the call, I was introduced 2 as the expert that was brought on to help them think 3 about bid design. They asked me to summarize my 4 thoughts in terms of both my view of the science of 5 the experimental design and optimal design. And 10:18 6 what I felt was generally important in terms of 7 experimental design, and then I listened to them 8 discuss what some of their opinions and thoughts on 9 how they felt the bid design should be set, and we 10 discussed it back and forth and weighed the issues 10:18 11 and ultimately came up with this bid design. 12 Q What did you tell the team you thought was 13 generally important during this conference call? 14 A I explained how there's a trade-off in any 15 kind of experimental design. In this case, in the 10:18 16 case of contingent valuation, there's a trade-off 17 between, for example, the number of bids you choose 18 to use and the statistical efficiency you will 19 obtain from those bids. And I, for example, felt 20 that six bids would be a good compromise, enough to 10:19 21 trace out a good part of the distribution, but still 22 obtain statistical efficiency. 23 Q Why did you believe that? 24 A Because I believe about 150 to 200 25 observations per bid is a good number to obtain to 10:19 43 </p>	<p>pretests and focus groups. Q And prior to this phone call, you hadn't reviewed the actual survey questions that elicited the responses in focus group No. 14, had you? A I'm sorry, could you — 10:21 Q I'm sorry, it was a bad — I misspoke. Prior to this phone call, you hadn't reviewed the actual survey questions that had elicited the responses that you reviewed in the focus groups and the second pilot study? 10:21 A I had not reviewed the survey questions at that point, that's correct. Q Okay. So we were talking about this phone call that you had with the team, and you said that you listened to them about their opinions. Describe 10:22 to me what you heard in that phone call. A What I most remember is the team's concern about using a conservative bid design in order to follow the guidance of the NOAA panel, and that their concern was to estimate the main part of the 10:22 willingness to pay distribution. And I think people were sharing their experiences about the focus groups they had observed, but I don't remember specifically what people said on -- on those topics. Q Anything else you can remember about that 10:23 45 </p>

<p>1 phone conversation?</p> <p>2 A Could you be more specific, please?</p> <p>3 Q Well, you described a two hour phone call in</p> <p>4 which these bid numbers were arrived at, and I want</p> <p>5 to understand what you and the other team members 10:23</p> <p>6 talked about during that phone conversation.</p> <p>7 A The other team members and I could talk for</p> <p>8 hours about numbers, so a two hour conversation</p> <p>9 about numbers is very easy to fill that time.</p> <p>10 Q Okay. So this wasn't a particularly long 10:23</p> <p>11 phone conversation for a team of experts on bid</p> <p>12 design?</p> <p>13 A That's correct.</p> <p>14 Q Directing your attention to Exhibit 7, in the</p> <p>15 text of Mr. Chapman's E-mail, he indicates, with a 10:24</p> <p>16 split on allocation of the 2,000 obs to two-thirds</p> <p>17 to the main survey, what is obs referring to, do you</p> <p>18 know?</p> <p>19 A That's code for observations.</p> <p>20 Q Okay. How did you arrive at the allocation 10:24</p> <p>21 that Mr. Chapman refers to in this last paragraph?</p> <p>22 A I did not arrive at that allocation. I</p> <p>23 believe the team determined that.</p> <p>24 Q Were you part of the decision concerning that</p> <p>25 allocation? 10:25</p> <p style="text-align: center;">46</p>	<p>Q How did you develop your proposed bid vector?</p> <p>A As I mentioned, I think I discussed the</p> <p>process I used for how to develop the bid design. I</p> <p>looked at the pretest data. I used my knowledge of</p> <p>how to think about bid designs and what I knew 10:26</p> <p>about — what I understood was the likely</p> <p>willingness to pay estimator they were planning to</p> <p>use, and developed this design based on this that</p> <p>information.</p> <p>Q How come you didn't look at any of the other 10:27</p> <p>pretest data other than the two datasets that were</p> <p>sent to you by Megan Lawson?</p> <p>A I wasn't sent any other data -- any other</p> <p>pretest data.</p> <p>Q I think you indicated a little earlier that 10:27</p> <p>you believe it's important to review all of the data</p> <p>that's collected in the pretest time period in</p> <p>developing a main survey, and then developing bid</p> <p>numbers; isn't that correct?</p> <p>MS. XIDIS: Objection to form. 10:27</p> <p>A No, I think what I indicated was that at every</p> <p>stage of the process you would use the best</p> <p>information you have collected in the previous</p> <p>stage. So at this point, I believe I was using the</p> <p>best information. 10:27</p> <p style="text-align: center;">48</p>
<p>1 A I do not think I had any input in that part of</p> <p>2 the discussion.</p> <p>3 Q Did you have any input into the bid amounts?</p> <p>4 A Yes.</p> <p>5 Q What was your input into the bid amounts? 10:25</p> <p>6 A I had developed a proposed bid vector, and I</p> <p>7 presented that to the team, and as we discussed my</p> <p>8 proposal and some of their opinions on how they</p> <p>9 wanted to do this, we revised that proposed bid</p> <p>10 design. 10:25</p> <p>11 Q You said you developed a proposed bid vector,</p> <p>12 did I get that right? What is a bid vector?</p> <p>13 A The list of bid points.</p> <p>14 Q Okay. So this list 10, 45, 80, 125, 205, 405</p> <p>15 is a bid vector? 10:26</p> <p>16 A That is a vector, yes.</p> <p>17 Q Okay. What was the proposed bid vector that</p> <p>18 you developed; was it the same?</p> <p>19 A It was not the same, but I don't remember the</p> <p>20 numbers. 10:26</p> <p>21 Q Do you remember what the high number was in</p> <p>22 your proposed —</p> <p>23 A Yes, it was 405.</p> <p>24 Q Do you remember what the low number was?</p> <p>25 A It was \$10. 10:26</p> <p style="text-align: center;">47</p>	<p>Q (By Mr. Deihl) And on what do you base that</p> <p>belief?</p> <p>A I believe the team chose to send me that</p> <p>pretest data because they felt it was the most</p> <p>informative for the next stage of the process. And 10:28</p> <p>they are experts in the field of contingent</p> <p>valuation and have done this type of process many</p> <p>times —</p> <p>Q So you —</p> <p>A And believe that they had hit the point where 10:28</p> <p>the pretest — these pretests were a good</p> <p>representation of what they were planning to do.</p> <p>Q And you relied on their representation that</p> <p>these were the best materials, best pretest</p> <p>materials for forming a bid design? 10:28</p> <p>A That's correct.</p> <p>Q What was the likely willingness to pay</p> <p>estimator that the team was planning to use?</p> <p>A As I said, it was — the team made it clear</p> <p>that it was important to them to use a conservative 10:28</p> <p>approach to estimate willingness to pay, and so in</p> <p>that regard, they made two choices to make their</p> <p>estimators conserv -- as conservative as possible.</p> <p>The first choice was to do a nonparametric</p> <p>estimator, which uses no assumptions about the 10:29</p> <p style="text-align: center;">49</p>

underlying willingness to pay distribution, so it's the most conservative approach to using the data to estimate the willingness to pay distribution. They also then chose to use a lower bound approach to trace out the willingness to pay distribution that, again, takes the most conservative assumptions possible about people's willingness to pay between the bid points that are designated.

Q Are there any limitations to using a nonparametric estimator? 10:29

A What do you mean by limitations?

Q Are there situations where the literature would tell someone that one ought not to use a nonparametric estimator?

A I don't know of any literature that suggests that you would not want to do a nonparametric estimator. I think if you want to get as close as possible to the public's willingness to pay, the conservative estimator we chose underestimates that. So using a nonparametric approach forces you to underestimate willingness to pay. So there could be circumstances where a researcher would not want to underestimate willingness to pay, but our -- the team's approach was to use the conservative estimator. 10:31

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Q Why don't we get a copy of the report.

MR. DEIHL: Let's go off the record for a second. I have a copy, but I want to get the marked copy.

VIDEOGRAPHER: We're off the record, 10:29 10:33 a.m.

(Whereupon, a discussion was held off the record.)

VIDEOGRAPHER: Back on the record, 10:30 a.m. 10:34

Q (By Mr. Deihl) Dr. Kanninen, I've handed you what's been marked as Deposition Exhibit No. 8, which is an E-mail from Megan Lawson to you and others dated September 2nd, 2008. Do you have that in front of you? 10:35

A Yes.

Q In the text of the E-mail, Ms. Lawson states, I've attached a spreadsheet summarizing the uncertainty and bid amount analyses we discussed this morning. Does that refresh your recollection that this phone call you had was on September 2nd, 2008? 10:35

A You're asking about the conference call with the team?

Q Yes, uh-huh. 10:35

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Q What estimator did the team use?

A It is called the ABERS estimator.

Q You said the vector that you had proposed used an upper bid of \$405. How did you come up with that number? 10:31

A In looking at the pretest data, I felt -- which had a high bid that was lower than 405, and looking at the votes at that bid, I felt to get the best tracing possible of the willingness to pay distribution, I felt it would be important to learn a little bit more about a slightly higher point on the willingness to pay distribution than what they collected in the pretest data, but I didn't want to push it out too far so that we'd be going into the tails, so I chose 405 as something that was a little bit higher, but not too much higher. 10:32

Q If you take a look again at Exhibit No. 4; do you have that in front of you?

A Yes.

Q I think there's a sheet appended to -- it's -- I'll come back to that. I don't think I have the right piece of paper with me. Is it your recollection that the main study interviewing began on about September 20th, 2008? 10:32

A I don't recall the specific date. 10:33

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A It may have been a different call, I don't know.

Q Okay. Did you have more than one call with the team prior to coming up with the bid design amount? 10:36

A It's possible. I don't remember.

Q Sitting here today, you can't recall a second call?

A This E-mail makes me think there may have been another call because I do not remember this being discussed, but I don't know. 10:36

Q Why does it make you think there may have been another call?

A I just don't remember a conversation about this in the initial call about the bid design. 10:36

Q Okay. Now, this E-mail is dated September 2nd, 2008. I'll represent to you that September 1st, 2008 was Labor Day, and the weekend prior was the weekend I think you said you were traveling from San Antonio back to your home in Maryland. Would that jibe with your recollection? 10:36

A I'd need you to repeat that to see if it jibes.

Q Well, you recall that the Democratic National Convention was that last week in August of 2008. 10:37

53

<p>1 Following the Democratic National Convention was the</p> <p>2 Labor Day weekend, and this is the Tuesday after the</p> <p>3 Labor Day weekend; correct?</p> <p>4 A Yes. It's very possible that I was not on the</p> <p>5 call that's referred to in this E-mail. 10:37</p> <p>6 Q Okay. Why did do you say that?</p> <p>7 A I'm saying it's possible.</p> <p>8 Q Okay. You just don't recall?</p> <p>9 A I don't recall.</p> <p>10 Q The E-mail purports to attach a spreadsheet 10:37</p> <p>11 summarizing the uncertainty in bid amount analyses</p> <p>12 we discussed this morning. The results are</p> <p>13 presented separately for the pilot and focus groups.</p> <p>14 Based on your review of this E-mail, is that what</p> <p>15 the E-mail appears to append? Is that what the 10:38</p> <p>16 attachment appears to reflect?</p> <p>17 A Well, as I said, I don't remember the</p> <p>18 discussion that she's referring to. So there is an</p> <p>19 attachment that appears to have bid amounts in it</p> <p>20 and an uncertainly variable. 10:38</p> <p>21 Q Did you have any phone calls with the team</p> <p>22 while you were in San Antonio?</p> <p>23 A No, I did not.</p> <p>24 Q Did you write a computer program or Excel</p> <p>25 spreadsheet that generated the bid design in this 10:38</p> <p style="text-align: center;">54</p>	<p>A I haven't seen the bid vectors to all the</p> <p>pretest surveys, so I --</p> <p>Q So you just don't know?</p> <p>A I don't know.</p> <p>Q Okay. Have you reviewed the Montruse study? 10:40</p> <p>A I have read parts of it.</p> <p>Q Do you know what the highest bid that was used</p> <p>in that study?</p> <p>A Not offhand, no.</p> <p>Q Was it important for you to consider the 10:41</p> <p>highest bids used in other contingent valuation</p> <p>surveys in arriving at the high bid that was used in</p> <p>this contingent valuation survey?</p> <p>MS. XIDIS: Objection to form.</p> <p>A No. 10:41</p> <p>Q (By Mr. Deihl) Why not?</p> <p>A When designing a bid vector, what's important</p> <p>is to look at information about the specific</p> <p>willingness to pay distribution for the good being</p> <p>valued for the specific project. And you mentioned 10:41</p> <p>a couple of contingent valuation studies that have</p> <p>been done, but there have been hundreds of</p> <p>contingent valuation studies done and the vectors</p> <p>have ranged all over the map, so there's no</p> <p>precedent for a certain bid being a high bid. 10:42</p> <p style="text-align: center;">56</p>
<p>1 matter?</p> <p>2 A No.</p> <p>3 Q I take it you didn't have any input into the</p> <p>4 bids that were used with the various focus groups or</p> <p>5 during the pretest; correct? 10:39</p> <p>6 A That's correct.</p> <p>7 Q Do you know why, except for the top bid, which</p> <p>8 here is 405, why the bid design used in this study</p> <p>9 was so similar to the pretest bids?</p> <p>10 A I'm sorry, could -- could you rephrase that? 10:39</p> <p>11 Q Sure. The bids that were used in the pretest</p> <p>12 are very similar to the bids that were used in the</p> <p>13 final survey. Do you know why?</p> <p>14 A Which bids are you referring to?</p> <p>15 Q The bid vector that was agreed upon in that 10:40</p> <p>16 September 3rd E-mail that I showed you earlier.</p> <p>17 A I'm sorry, I'm not understanding what you're</p> <p>18 comparing.</p> <p>19 Q Okay.</p> <p>20 A The bid vector in this E-mail? 10:40</p> <p>21 Q Let me try again. What I'm trying to compare</p> <p>22 is the bids that were used in the pretest surveys to</p> <p>23 the bids that were used in the main study survey.</p> <p>24 And my question is, do you know why those bid</p> <p>25 vectors are substantially similar? 10:40</p> <p style="text-align: center;">55</p>	<p>Q How many studies in the published literature</p> <p>use bids higher than \$400?</p> <p>A I don't know a number offhand. I would</p> <p>imagine it's quite a few, particularly since this</p> <p>study looked at a one time payment, and many 10:42</p> <p>contingent valuation studies talk about an annual</p> <p>payment. So any contingent valuation study that,</p> <p>for example, would have asked about a \$50 a year</p> <p>payment would be a bit higher than what the study</p> <p>has. 10:42</p> <p>Q Sitting here today, can you think of a single</p> <p>study that used bids prior to \$400?</p> <p>A I don't memorize bid vectors, but I'm quite</p> <p>sure Joe Cooper and John Loomis have, as an example.</p> <p>I'm sure there are a number, but that would be one 10:43</p> <p>you could look at.</p> <p>Q Joe Cooper and John Loomis in what survey?</p> <p>A I don't recall the specific details of the</p> <p>studies they have done.</p> <p>Q Besides reviewing the materials that were sent 10:43</p> <p>to you by Megan Lawson on August 20th, 2008, as</p> <p>reflected in Deposition Exhibit No. 4, what</p> <p>empirical work did you do to determine the bid</p> <p>vector in this case?</p> <p>A I'm not sure I understand that question. 10:43</p> <p style="text-align: center;">57</p>

1	Q Did you do anything other than reviewing the		A Do you know the date on this file?	
2	materials that were sent to you on August 20th, 2008		Q The file was labeled drop space 405 space	
3	and having this phone conversation that you		log-Logit graphs. There was not a date, to my	
4	described with the team in arriving at the bid		knowledge. Maybe there was. I don't know.	
5	vector that was used in this survey?	10:44	A Yeah, there would be a date.	10:48
6	A Generally, I rely on the expertise I've		Q Okay.	
7	developed about experimental design when I think		A Nevertheless, this was done very early in the	
8	about a new experimental design, so I didn't have to		process.	
9	do something specific to prepare for that. I used		Q Right.	
10	the expertise I have. I looked at the materials	10:44	A Very early in the fall, probably on pretest	10:48
11	they sent me.		data, I can't say for sure because you don't know	
12	Q When you say you used the expertise you have,		the date of this file. This compares a log-Logit	
13	what does that tell you about what the bid vector		model, which would be the red line, with the	
14	should be in this particular study?		empirical responses we had collected at the time,	
15	A Several of my published papers are on the	10:45	which, as I said, might have been pretest data --	10:48
16	topic of how to select bid values based on		no, I'm sorry, if it had this bid vector, it was	
17	information that you have in hand, and this study is		early data, perhaps some of the early data that we	
18	a specific example where we have information and		got from Wes-Stat, and what it's doing is affecting	
19	need to develop the bid design, but the general		the fit of the log-Logit model to the actual data.	
20	process and the general rules of thumb that I	10:45	And what one often does, what econometricians will	10:49
21	developed in the literature would apply directly to		often do when assessing fit is try to determine	
22	this case.		whether any particular data points are influencing	
23	Q Why don't you take a look again at your CV and		the fit of the model. So this is a parametric	
24	point out to me which articles you are referring to		model, which is not what we ultimately used, and at	
25	when you say several of your studies would help you	10:45	this point, and as I said, this was early in the	10:49
	58		60	
1	in this bid design.		process and not something we pursued, I had	
2	A Which articles?		estimated this log-Logit model and I was	
3	Q Yes.		experimenting with how I might get a better fit for	
4	A The first -- going from the top of the list,		the log-Logit model by experimenting with what might	
5	Optimal Design for Multinomial Choice Experiments;	10:46	be influential data points in terms of the fit with	10:49
6	Bias and Discrete Response Contingent Valuation;		the log-Logit model.	
7	Sensitivity of Willingness to Pay Estimates to Bid		Q Okay. You're going to have to explain to me	
8	Design and Dichotomous Choice Contingent Valuation		what a log-Logit model is.	
9	Models, a Comment; Optimal Experimental Design for		A Let me start with a Logit model.	
10	Double-Bounded Dichotomous Choice Contingent	10:46	Q Okay.	10:50
11	Valuation; and Design of Sequential Experiments for		A A Logit model is a parametric that assumes a	
12	Contingent Valuation Studies; and the book chapter,		functional form for the probability of a person	
13	underneath chapters and books, Experimental Design		voting yes or no to the vote question. A log-Logit	
14	for Stated Choice Experiments.		model is -- uses the same functional form as the	
15	Q So those materials you've just identified	10:46	Logit model, but instead of the model being a	10:50
16	would be some of the background expertise that you		function of bid, it's a function of the log bid.	
17	would have relied upon in forming the bid vector in		Q What does the PR (vote line) represent on this	
18	this particular --		graph, the red line?	
19	A Yes.		A That should be the log-Logit model.	
20	Q -- survey?	10:47	Q Why did you drop the \$405 bid on this model?	10:50
21	A Sorry.		A As I said, I was assessing fit for the	
22	Q Dr. Kanninen, I've handed you what's been		log-Logit model. This is not a particularly good	
23	marked as Deposition Exhibit No. 9, which appeared		fit right here, as is, but because the log-Logit	
24	in your considered by materials. Can you identify		model was declining at a rapid rate, I just did a	
25	for me what this graph depicts?	10:48	test to see if it would fit the empirical	10:51
	59		61	

<p>1 distribution better by dropping that bid. It was 2 just a test of the parametric model, which we 3 ultimately chose not to use.</p> <p>4 Q Were you aware that a \$500 bid amount was 5 pretested in the February 6th, 2008 survey? 10:51</p> <p>6 A I do not believe I was aware of that.</p> <p>7 Q Do you know what percentage of respondents 8 said yes to that \$500 bid amount?</p> <p>9 A No.</p> <p>10 Q Would that have been important to you to know 10:51 11 what percentage of respondents said yes to the \$500 12 bid amount in the February 6th, 2008 survey?</p> <p>13 MS. XIDIS: Objection to form.</p> <p>14 A If the team did not feel that that was a study 15 that was worth providing to me to assess the final 10:52 16 design, I assume they did not feel that it was 17 something that would be informative to the final 18 process.</p> <p>19 Q (By Mr. Deihl) You've never reviewed that 20 February 6th, 2008 survey; correct? 10:52</p> <p>21 A That's correct.</p> <p>22 Q So you're relying upon the team's expertise in 23 determining whether or not that survey would have 24 been helpful in developing a proper bid vector in 25 this case; correct? 10:52</p> <p style="text-align: center;">62</p>	<p>A I think I answered the first part of your question a little bit earlier in saying -- you asked me the same question about whether I -- whether one needs all pretest information, and I said, I believe design proceeds in stages and you rely on the best 10:55 information for the previous stage. At any point in that process, if you determine that some information is no longer going to be informative to the next stage, it doesn't need to be used.</p> <p>Q (By Mr. Deihl) And you were relying on the 10:55 other team members to make the decision whether or not that other information would be informative to the next stage in this case; correct?</p> <p>A You're asking that kind of in the negative form. I was -- I made the assumption that the team 10:55 of experts had provided me with the information they felt I needed to assist them in developing the best design possible.</p> <p>Q Okay. Let's suppose for a moment that the bid schedule was from \$50 to \$125 instead of from \$10 to 10:56 \$405. What do you think would happen to your estimated willingness to pay results?</p> <p>MS. XIDIS: Objection to form.</p> <p>A I don't know.</p> <p>Q (By Mr. Deihl) You don't have any opinion, 10:56</p> <p style="text-align: center;">64</p>
<p>1 MS. XIDIS: Objection to form.</p> <p>2 A Could you repeat that question?</p> <p>3 MR. DEIHL: Would you read the question 4 back, please?</p> <p>5 (Whereupon, the court reporter read back 10:53 6 the previous question.)</p> <p>7 Q (By Mr. Deihl) You were relying upon the team 8 to determine whether or not that February 6th, 2008 9 survey would have been helpful in developing the bid 10 vector in this survey; correct? 10:53</p> <p>11 A I hadn't heard of that focus group until you 12 mentioned it just now, so I was not relying on the 13 team in any way in making any determination 14 regarding it.</p> <p>15 Q Well, you said to me earlier that you thought 10:54 16 it was important to you, as an expert in bid survey 17 design, to review all of the pretest information and 18 to analyze that pretest information in arriving at a 19 bid vector for the main survey, and then you've just 20 told me, I think, that you were relying upon the 10:54 21 team of experts here to provide you with the 22 information that they thought was relevant in 23 developing a bid vector for the main survey; did I 24 get that right?</p> <p>25 MS. XIDIS: Objection to form. 10:54</p> <p style="text-align: center;">63</p>	<p>based on your expertise?</p> <p>A It's impossible to say without collecting the data.</p> <p>Q Would that be true with any bid vector other than the one you tested? 10:56</p> <p>A I'm sorry, would what be true?</p> <p>Q You said it was impossible to say without looking at the data, and my question was, would you give the same answer for any bid vector other than the one you tested? 10:57</p> <p>MS. XIDIS: Objection to form.</p> <p>A Yeah, I need you to go back two stages.</p> <p>Q (By Mr. Deihl) Okay.</p> <p>A Could you -- could you rephrase the question?</p> <p>Q Sure, let's try again. I asked you the 10:57 question, suppose the bid schedule was from \$50 to \$125, and I asked you what do you think would happen to your estimated willingness to pay results, and I think your answer was, it's possible to say; did I get that right? 10:57</p> <p>A Yes.</p> <p>Q My follow-up question was, would you say it was impossible to say for any bid vectors other than the one that you tested?</p> <p>A There are subsets of the current bid vector 10:57</p> <p style="text-align: center;">65</p>

<p>1 where if they had been asked, we could say something 2 about how the lower bound willingness to pay 3 distribution might change. 4 Q So if it was a subset of the bid vector you 5 tested, you could say something about it? 10:58 6 A I could say something about how our lower 7 bound estimate of willingness to pay would change. 8 Q Okay. What if, for example, a subset of this 9 estimate would be from \$45 to \$125, could you say 10 something about that? 10:58 11 A What are the bids, specifically? 12 Q I don't think you did a bid study -- I'm 13 asking you. You said if it was a subset of your 14 bids, you could tell me what you think would happen 15 to the estimated willingness to pay results, and I 10:59 16 just threw out a hypothetical from \$45 to \$105. 17 MS. XIDIS: Objection to form. 18 A I couldn't answer that. 19 Q (By Mr. Deihl) Okay. Are there any subsets 20 that you could answer? 10:59 21 A I'm not sure. I think I would need an 22 example. 23 Q Okay. For example, could you say whether a 10 24 to 125 bid vector would have resulted in a higher or 25 lower estimated willingness to pay than the 11:00 66</p>	<p>A No, I believe I said it would be an even more conservative lower bound estimate of willingness to pay. Q (By Mr. Deihl) So you could -- you could provide an answer to me if you had the data? 11:02 A As a professional, I would not feel comfortable providing a willingness to pay estimate when the responses I got didn't even cross over the 50th percentile. So on a professional basis, I would not want to provide that type of information 11:02 to a client. Q You say you wouldn't want to do it because the responses you got didn't even cross over the 50th percentile. Why did you -- why is the 50th percentile important? 11:02 A The 50th percentile is the median of the distribution. It's the point where half of the respondents would be willing to pay that amount, so it's generally thought to be approximately the middle of the distribution. If you haven't -- 11:03 basically, if you haven't gotten to the point of the 50th percentile, the middle of the distribution in some sense, you haven't estimated the distribution. Q You indicated that my hypothetical from 10 to 125, based on this survey, would be a poor bid 11:03 68</p>
<p>1 willingness to pay estimate in this study? 2 A You're making the assumption that the votes 3 would be what we obtained for those? 4 Q I think that's what you said you would need me 5 to assume in order to answer the question; is that 11:00 6 correct? 7 A I believe so, yes. 8 Q Okay. So yes, I am making that assumption. 9 A So what's the bid range again? 10 Q 10 to 125. 11:00 11 A If the bids range from 10 to 125, I believe at 12 \$125, we had about 60 percent of people saying yes, 13 they would pay 125. So if that had been our bid 14 range, we would, for example, not have learned what 15 the median willingness to pay is. We would not have 11:01 16 crossed over the middle of the distribution. It 17 would be a poor bid design, which would result in a 18 highly conservative lower -- a lower bound estimate 19 of willingness to pay that I do not believe would be 20 particularly informative. 11:01 21 Q So in answer to my question, you couldn't tell 22 me whether it would result in a higher or lower 23 estimated willingness to pay than the willingness to 24 pay estimate in this survey? 25 MS. XIDIS: Objection to form. 11:02 67</p>	<p>design. Why? A Well, as I said, for the final product, it would not trace out very much of the actual distribution. Q Would the 10 to 125 bid vector tell you 11:03 anything about the lower bound estimate for willingness to pay? A It would give us a lower bound on the lower bound. Q You talked about the process that you went 11:04 through to develop the bid vector in this case, and I think you've referred to the materials that Stratus sent you, you referred to the expertise that you have, as reflected on the articles on your CV, and you referred to this telephone call that you had 11:04 with the Stratus experts. Anything else you took into consideration in reaching that bid vector? MS. XIDIS: Objection to form. A I can't think of anything at the moment. Q (By Mr. Deihl) Can you tell me what a choke 11:04 price is? A A choke price is referred to in demand modeling often as the point at which there would be a zero demand for a product. Q When you're designing bid vectors, do you look 11:05 69</p>

1	for a choke price when you're testing bids?		weren't aware, that a \$500 bid amount had been	
2	A Do I look for a point at which nobody would		tested in February of 2008. You weren't aware of	
3	want to buy the good?		that before I told you that today; correct?	
4	Q Yes.		A That's correct.	
5	A That would be in the extreme tails of the	11:06	Q Would it matter to you what percent answered	11:09
6	distribution, the point where everybody would say		yes at the \$500 bid level in designing the upper	
7	no, I won't pay it.		bid?	
8	Q Right.		MS. XIDIS: Objection to form.	
9	A That would be essentially at the zeroth		A If the scenario had changed from that point to	
10	percentile, and I'm on record as recommending that	11:06	the point of the final survey, that would not have	11:10
11	one not pursue tails, and that would certainly be an		been an informative piece of information to me.	
12	example of that.		Q (By Mr. Deihl) What if the scenario had not	
13	Q Why are you on record stating that one ought		changed?	
14	not to pursue tails?		A So you want me to speculate on whether --	
15	A The tails of the distribution.	11:06	Q Yes, I do.	11:10
16	Q Yes.		MS. XIDIS: Objection to form.	
17	A This is what we discussed earlier in the day.		A If that earlier survey had been identical to	
18	It takes a lot of -- you have to collect a lot of		the information -- the final survey, then -- and the	
19	observations at a point in the tails in order to		team felt it was reliable information, then it -- I	
20	estimate that response well, and it's just very	11:06	would have used that information, as well, but the	11:11
21	costly.		team did not provide it because they did not believe	
22	Q Can you point to any study of nonuse or total		it would be informative to me.	
23	values where the top bid actually resulted in a		MR. DEIHL: Why don't we take a break for	
24	proportion of yes bids falling to zero?		a tape change.	
25	A I -- as I said, if the response fell to zero,	11:07	VIDEOGRAPHER: We're off the record, 11:07	11:11
	70		72	
1	it would be an inefficient bid design. I do not		a.m.	
2	know of anybody who has tried to do that. It's		(Following a short recess at 11:11 a.m.,	
3	possible that there are papers in the literature		proceedings continued on the record at 11:22 a.m.)	
4	with a zero response at the higher bids, but I can't		VIDEOGRAPHER: Back on the record, 11:18	
5	name them for you offhand.	11:08	a.m.	11:22
6	Q What logic guides the selection of the top bid		Q (By Mr. Deihl) Before we took a break, Dr.	
7	number?		Kanninen, we were talking about whether or not the	
8	A As I've said, the main part of the logic is to		\$500 bid amount from the February survey would have	
9	try to keep the bids out of the tails of the		been useful to you in developing a bid vector in the	
10	distribution. So depending on the type of pretest	11:08	main survey, and I think your answer was if it was	11:23
11	information you have, if you have informative		identical to the final survey, if the presurvey had	
12	pretest information, you might have a good sense of		been identical to the final survey and if the team	
13	where that tail lies and how far you do not want to		had found it reliable. If the information in the	
14	go. From there, it's basically a question of how		presurvey was identical to the final survey, did it	
15	certain you feel about the pretest information you	11:08	matter to you whether or not the team felt it was	11:23
16	have, and whether you feel it's important to		reliable?	
17	pursue -- how far of a range you feel it's important		MS. XIDIS: Objection to form.	
18	to pursue.		A I don't understand that question.	
19	Q If the pretest information indicates that		Q (By Mr. Deihl) Well, in answer to my earlier	
20	you're -- well, strike that. How would you know if	11:09	question, you gave me -- you said you would rely on	11:23
21	the pretest information tells you that you're into		that \$500 number or it would be important to you if	
22	the tail?		it was one -- if the presurvey was identical to the	
23	A If you got a response rate at something like		final survey, and if the team felt that it was	
24	15 percent or 10 percent or 5 percent.		reliable information. And my question was, if it	
25	Q In this case, I told you, and I think you	11:09	was identical to the final survey, did it matter	11:23
	71		73	

1	what the team thought about that information, to	copy of the main Stratus report. Could you point me
2	you?	in that report to the discussion of how the team
3	MS. XIDIS: Objection to form.	selected the bid vector in this case?
4	A Yes, I would actually have to revise what I	A I do not recall a discussion in here about how
5	said earlier. I would just say if the team felt 11:24	the bids -- could you repeat the question? I'm 11:28
6	that information was relevant to me, then I would	sorry.
7	have wanted to see it. If the team thought it would	Q My question was if you could point me in the
8	be informative to my process, it would have been	report to a discussion of how the bid vector in this
9	informative to me.	case was selected.
10	Q (By Mr. Deihl) So you were relying entirely 11:24	A I do not think there is a specific section 11:28
11	upon the team's assessment of whether or not that	discussing how the bid vector was selected. There
12	information would have been informative?	is a point in the actual -- where the survey is
13	A Yes, and the reason I'm revising what I said	presented where it states what the bids were.
14	is there are a multitude of factors that would	Q Why did you not include in the report a
15	determine whether or not they would want to rely on 11:24	discussion of how the bid vectors -- bid vector was 11:28
16	that data. It's just not the wording of the survey,	chosen?
17	but whether they had, at that point, felt they'd had	A Once the data are selected, what's important
18	a representative sample, all sorts of information.	is what the responses were to those bids and what
19	So the team has expertise in all of those areas,	that indicates for the willingness to pay
20	survey wording, sampling design, and developing 11:25	distribution. I think given the way the report is 11:29
21	questions that will be informative and reliable. So	set up, there wasn't a discussion of that part of
22	I think there could be no better evidence of a piece	the process as something that needed to be presented
23	of information being informative than if the team	after the fact.
24	recommended it as being informative.	Q Other than the articles you pointed me to in
25	Q And conversely, if the team recommended it 11:25	your CV, did you rely upon any published papers in 11:29
	74	76
1	wasn't informative, then you wouldn't view it as	reaching the bid design in this case?
2	informative?	A Other than my own papers?
3	A With regard to the pretest data, yes.	Q Uh-huh.
4	Q Based on your published papers about optimal	A Is that what you're asking? I'm familiar with
5	bid design, in your opinion, is the design of this 11:25	the literature on optimal design and experimental 11:30
6	survey optimal?	design, and in that sense, that all serves as
7	A Optimal has a multitude of definitions. The	background information to me when I think about a
8	researcher has to determine what optimality means to	new bid design, but there were not any specific
9	him or her. I would say given what the team's goals	papers I pulled out to help me think about this
10	were in this project, that the design was an 11:26	design. 11:30
11	excellent design, yes.	Q Why did you choose in the report not to refer
12	Q And again, what were the team's goals in this	to this literature on optimal design?
13	project?	A I think the report was written to present the
14	MS. XIDIS: Objection, asked and answered.	results of the study and design -- once the bids are
15	A I believe the goals were to estimate the bulk 11:26	chosen, the design is what it is. Whether or not 11:30
16	of the willingness to pay distribution and to	it's optimal has more to do with how costly the
17	estimate it well, and to comply with the NOAA	survey was to the people doing the survey than it
18	panel's recommendation of keeping the design and the	does to the readers. It's not relevant to the
19	study as conservative as possible. And by what they	readers evaluating the study as much as it is
20	chose to do in complying with that is to estimate a 11:26	relevant to the those who did the study and what 11:31
21	lower bound on willingness to pay, and I believe the	they had to pay to collect those observations.
22	design worked very well for those goals.	Q But isn't it true that the bid vector can
23	Q (By Mr. Deihl) Dr. Kanninen, I'm handing you	affect the final willingness to pay number?
24	what was previously marked in the Dr. Tourangeau's	MS. XIDIS: Objection to form.
25	deposition as Deposition Exhibit No. 6, which is a 11:27	A I think willingness to pay is what willingness 11:31
	75	77

<p>1 to pay is.</p> <p>2 Q (By Mr. Deihl) Do you think — you think you</p> <p>3 could use any bid design, any set of bid design</p> <p>4 numbers in connection with this survey and come up</p> <p>5 with the same willingness to pay number? 11:31</p> <p>6 MS. XIDIS: Objection to form.</p> <p>7 A The public of Oklahoma has a willingness to</p> <p>8 pay for the program that's specified in this survey.</p> <p>9 I think that willingness to pay is what it is. I do</p> <p>10 not think it's affected by the bid design. 11:31</p> <p>11 Q (By Mr. Deihl) So again, my question was, if</p> <p>12 I had chosen a different bid vector, would have that</p> <p>13 different bid vector resulted in the same</p> <p>14 willingness to pay number?</p> <p>15 MS. XIDIS: Objection to form. 11:32</p> <p>16 Q (By Mr. Deihl) In your opinion.</p> <p>17 A Again, I believe the public's willingness to</p> <p>18 pay is what it is, and whatever bids we asked them,</p> <p>19 they would have responded according to their</p> <p>20 willingness to pay. Our bid can't affect what their 11:32</p> <p>21 willingness to pay is.</p> <p>22 Q (By Mr. Deihl) Yes, but keep talking about</p> <p>23 the public's willingness to pay. You didn't survey</p> <p>24 every citizen of the State of Oklahoma; right?</p> <p>25 A That's correct. 11:32</p> <p style="text-align: center;">78</p>	<p>would not affect willingness to pay.</p> <p>Q (By Mr. Deihl) Okay. So the bid vector can</p> <p>affect the team's estimate of the citizens of</p> <p>Oklahoma's willingness to pay; correct?</p> <p>A The team's lower bound estimate. 11:34</p> <p>Q Tell me what you mean by lower bound estimate.</p> <p>A Essentially, the team chose to use the most</p> <p>conservative approach possible for estimating</p> <p>willingness to pay, and what that entails is</p> <p>obtaining votes at particular bid levels, which were 11:34</p> <p>the six point bid vector, and using those vote</p> <p>percentages as estimates for how they would vote at</p> <p>those particular bids. But between those bids, we</p> <p>make the most conservative — conservative</p> <p>assumption possible, which is that between any two 11:35</p> <p>bids, nobody would actually have a willingness to</p> <p>pay higher than the lower of those two bids. It</p> <p>results in a stair-step shape for the willingness to</p> <p>pay distribution that — the lower bound willingness</p> <p>to pay distribution that we estimate. By doing the 11:35</p> <p>estimation that way, we are guaranteeing that</p> <p>whatever estimate we come up with, it is lower than</p> <p>the willingness to pay. A lower bound means you are</p> <p>lower than what you are seeking.</p> <p>Q (By Mr. Deihl) Now, that's only true if the 11:35</p> <p style="text-align: center;">80</p>
<p>1 Q So what you're trying to do in this bid design</p> <p>2 is develop a statistical tool to arrive at a</p> <p>3 willingness to pay number that you think reflects</p> <p>4 the public of Oklahoma's willingness to pay to clean</p> <p>5 up Tenkiller Lake and the Illinois River; correct? 11:32</p> <p>6 MS. XIDIS: Objection to form.</p> <p>7 A We are using the study to estimate a lower</p> <p>8 bound on the public's willingness to pay. Our study</p> <p>9 cannot affect what the public's willingness to pay</p> <p>10 is. 11:33</p> <p>11 Q (By Mr. Deihl) If I had used a different bid</p> <p>12 vector, would it have affected potentially the lower</p> <p>13 bound willingness to pay?</p> <p>14 MS. XIDIS: Objection to form.</p> <p>15 A I'm sorry, could you repeat the question? 11:33</p> <p>16 MR. DEIHL: Could you read back her last</p> <p>17 answer, please?</p> <p>18 (Whereupon, the court reporter read back</p> <p>19 the previous answer.)</p> <p>20 MR. DEIHL: Then can you read my question, 11:33</p> <p>21 please?</p> <p>22 (Whereupon, the court reporter read back</p> <p>23 the previous question.)</p> <p>24 A It's possible that it would have affected our</p> <p>25 lower bound estimate of willingness to pay. It 11:34</p> <p style="text-align: center;">79</p>	<p>results of the bid amounts was parametric; correct?</p> <p>MS. XIDIS: Objection to form.</p> <p>A No, that doesn't sound correct at all.</p> <p>Q (By Mr. Deihl) Okay. If, for example, the</p> <p>respondents at a hundred and five bid amount — 11:36</p> <p>strike that. For example, if 20 percent of the</p> <p>respondents at \$105 bid amount — let me try a third</p> <p>time. Hypothetically, if 20 percent of the</p> <p>respondents were willing to pay \$105, and only 15</p> <p>percent of the respondents were willing to pay \$85, 11:36</p> <p>would that affect the estimate of lower bound</p> <p>willingness to pay?</p> <p>MS. XIDIS: Objection to form.</p> <p>A I — I don't understand what you're asking.</p> <p>Q (By Mr. Deihl) I'm not asking it very well. 11:37</p> <p>That's fair. Let me try again. Dr. Kanninen, I've</p> <p>handed you a copy of your 1993 article entitled Bias</p> <p>and Discrete Response Contingent Valuation; is that</p> <p>correct?</p> <p>A The date is 1995. 11:38</p> <p>Q I'm sorry, 1995. And I was referring to 1993</p> <p>because the article on the byline indicates it was</p> <p>revised August 27th, 1993; do you see that?</p> <p>A I do see that. The publication date is at the</p> <p>top. 11:38</p> <p style="text-align: center;">81</p>

1	Q Right.		Q Is that the estimator that you planned to use?	
2	A The actual citation.		A We had not worked out the details, the full	
3	Q Yes. And this is an article you wrote?		details of the estimator at the beginning of the	
4	A Yes, it is.		project, but yes.	
5	Q Would you take a look at Page 118, please, the 11:38		Q You're going to have to help me out here 11:42	
6	section entitled, some guidance on bid design. It		because your article says optimal designs tend to be	
7	indicates in the second sentence, in theory, optimal		one or two degree designs, and you used a six point	
8	designs tend to be one or two point designs, which		design here, and I thought your answer was you did	
9	are objectionable and practiced for several reasons,		that because you used a nonparametric approach. Did	
10	the main one being that they require knowledge of	11:39	I get that part right? 11:43	
11	parameter values before the survey is designed. If		A That sounds right, yes.	
12	optimal designs are one and two point designs, how		Q When you say you used a nonparametric	
13	can a six point design be optimal?		approach, what do you mean?	
14	A The optimal design approach I was referring to		A Oh, I'm sorry, I may or may not have said it	
15	at this point referred to parametric models, which,	11:39	that way. I was saying you were approximately	11:43
16	for example, the Logit and log-Logit that we		right. But when we designed this study, our	
17	discussed earlier, those models tend to have two		expectation was that we were going to use a	
18	parameters that you need to estimate. So you can		nonpara — nonparametric estimator for willingness	
19	typically estimate those models with as few as two		to pay. That was one of our goals for the study was	
20	bids along that distribution. It's because you are	11:40	to do a good job of estimating that nonparametric	11:43
21	making an assumption about the shape of the		estimator of willingness to pay. So could you	
22	distribution at — beforehand. The approach we're		repeat the question again, please?	
23	using in this study is a nonparametric approach. We		Q Okay. So you designed the study thinking that	
24	are not assuming anything about the functional form,		you were going to use a nonparametric estimator, and	
25	which means every point that we estimate along the	11:40	in your opinion, because you designed the study	11:44
	82		84	
1	willingness to pay distribution is a parameter we		thinking you were going to use a nonparametric	
2	have to estimate. So if we had done two points in a		estimator, therefore, you could use a six point	
3	nonparametric — for nonpara — for nonparametric		design instead of a two point design; is that	
4	purposes, we would have only had two points on that		correct?	
5	willingness to pay and it would not be a very good	11:40	A That's not the specific line of thinking that	11:44
6	tracing of the willingness to pay distribution.		I pursued, but I certainly felt that a six point	
7	Q Explain to me what you mean by parametric and		design would be better than a two point design if	
8	nonparametric again.		somebody had suggested that.	
9	A Parametric is when you assume a mathematical		Q Okay. But your article here says, optimal	
10	functional form for the probability that people will	11:41	designs tend to be one or two point designs;	11:44
11	vote yes or no to a vote question. Nonparametric,		correct? When are designs — when are optimal	
12	you make no assumption about an underlying		designs one or two point designs, in what	
13	functional form for people's probabilities, you just		circumstances?	
14	take the information that people do or don't vote		A Well, if you finish the sentence that you	
15	yes or no and use that information alone to estimate	11:41	read, what I said was one or two point designs which	11:44
16	that probability.		are objectionable in practice for several reasons,	
17	Q And why do you say that this survey is a		The main one being that they require knowledge of	
18	nonparametric survey?		the parameter values before the survey is designed.	
19	A I'm sorry, I misspoke. The estimator is a		What happens with optimal design is it's only	
20	nonparametric estimator. The survey was designed	11:41	possible to know what the truly optimal bid points	11:45
21	with the plan to use a nonparametric estimator.		were, and this is simply for cost savings purpose to	
22	Q Which plan was the survey designed to use?		have an optimal design. You only would know what	
23	Which estimator was the survey designed to use?		the exact optimal points would be after you have	
24	A The estimator that we used in the study is		done the study. So I don't think anybody in	
25	called the ABERS estimator.	11:42	practice would design a survey with one or two bid	11:45
	83		85	

points.

Q But —

A And I have never recommended doing so.

Q But in theory, the optimal designs tend to be one and two bid points; correct? 11:45

A In theory, if you are estimating a parametric model such as Logit or Probit, the optimal designs are one or two point designs, but that is not what we're doing in this study.

Q I know it's not what you did in this study. Why, theoretically, is it better to use a two point design as opposed to a six point design? 11:45

A With a parametric model, you mean?

Q Yes.

A With a parametric model, the simplest parametric, such as a Logit or Probit, have two parameter values, a constant term, and then a coefficient on the bid value. When you need to estimate two parameters, what you need are at least two pieces of information to do so. And, in fact, if you just imagine algebraically or think back to calculus, generally, if you're trying to maximize something with a lot of functions, there's just one maximum. In this case, there are two parameters to estimate. You need at least two bid points to

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MS. XIDIS: Objection to form.

A I think I explained the goals in these two cases were completely different. When you're estimating a nonparametric model, you can only estimate the willingness to pay distribution by tracing it out using bid levels and the responses to those bid levels. You need a set of bids to get a tracing of the distribution. With parametric models, you are assuming an underlying functional form, which essentially gives you a tracing before you start, and all you need to do is determine where it goes, which are the parameter estimates, and that's why it only takes two points to estimate that parametric model. But that is not what we were trying to do. We chose not to assume a parametric model beforehand, so our goal was to trace out the willingness to pay distribution, and again, to do that, we needed to use a set of bid levels.

Q Why did you choose not to use a nonparametric model beforehand? 11:49

A I'm sorry?

MR. DEIHL: Could you read back her -- the end of her last answer, please?

(Whereupon, the court reporter read back the previous answer.) 11:49

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estimate those, and there are exactly two that would do the very best job of estimating those.

Q Okay. Now, is ABERS a nonparametric or a parametric estimator?

A ABERS is a nonparametric estimator. 11:47

Q Parametric. Thank you. Now, in this case, you had done a lot of predesign surveys and focus groups and et cetera. Did you feel that you didn't have sufficient information in order to do a two point design in this case? 11:47

MS. XIDIS: Objection to form.

A You're talking about this study?

Q (By Mr. Deihl) Yes.

A As I said, I've never recommended a two point design in any case. 11:47

Q Okay. Why not? I think you answered that because you don't have enough data and you'd have to do the whole study before you could arrive at the two point design; is that correct?

MS. XIDIS: Objection to form. 11:48

A Yes.

Q (By Mr. Deihl) Okay. And in this case, you had done a number of focus groups and a number of pretest surveys. Why couldn't have you used a two point design in this case? 11:48

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Q (By Mr. Deihl) Why did you choose not to use -- why did you choose to use a nonparametric approach beforehand?

A I think I've answered that, but again, the team made the choice to use a nonparametric approach because it doesn't make any assumptions about the willingness to pay distribution, and it makes the most conservative -- it is the most conservative approach to estimating willingness to pay, and by choosing the nonparametric ABERS estimator, the team was following the guidance of the NOAA panel in terms of being conservative in their approach. 11:50

Q Okay. Maybe this is my confusion. When you're using the term nonparametric approach, what you mean is you're planning to use a nonparametric estimator; is that correct? 11:50

A Yes, a nonparametric estimator or a nonparametric approach to estimation.

Q And so you felt that the nonparametric approach would be the most conservative approach? 11:51

A The team felt so, yes.

Q Okay. And when did you reach the conclusion that you were going to use the nonparametric approach to estimating? That was before the survey was started? 11:51

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<p>1 A I believe the team was assuming -- I believe 2 the team had made that decision before I became 3 involved in the project, that that was the most 4 likely approach that was going to be used.</p> <p>5 Q Did they tell you that? 11:51</p> <p>6 A I believe so, yes.</p> <p>7 Q So that would have occurred in that early 8 September phone call that we talked about earlier?</p> <p>9 A Where they would have said this was their idea 10 for estimating willingness to pay? Yes. 11:51</p> <p>11 Q Okay. And because you used this nonparametric 12 approach to estimation, you felt that a six point 13 design would be a good design in this case; correct?</p> <p>14 A That's correct.</p> <p>15 Q If you'd -- if you'd direct your attention to 11:52 16 the second paragraph on Page 118 of your 1995 17 article, the first sentence reads, the lowest biases 18 are obtained with the middle only case where bids 19 are located only within the 30th to 70th percentiles 20 of the distribution; do you see that? 11:52</p> <p>21 A Yes.</p> <p>22 Q Now, Stratus pretested a bid of \$500. How did 23 you determine that \$405 was within the 85 percent 24 rule of thumb that you set forth here?</p> <p>25 MS. XIDIS: Objection to form. 11:53 90</p>	<p>in?</p> <p>A As I said, my general rule of thumb from my statistical work and theoretical work is what you reminded me of, generally not trying to collect bids outside of the 15 percentiles on either side. The 11:55 team took a more conservative approach to mine because they wanted to follow the NOAA panel guidelines and be conservative, and they chose not to try to pursue even out that far, but to just keep the bids to what they thought would be the bulk of 11:55 the distribution, which is about where we ended up.</p> <p>Q How did you know that that's where you ended up?</p> <p>A I have the data. I have seen the data.</p> <p>Q If you'd direct your attention to the third 11:55 paragraph of your article, the second sentence, it states, the upper tail only case uses bids ranging from \$300 to a thousand dollars. The SB model shows large biases for the para -- parameter, excuse me, for the parameter and the willingness to pay 11:56 estimates. The DB model, however, does surprisingly well.</p> <p>What exactly are you referring to when you're talking about the upper tail ranging from 300 to a thousand dollars? 11:56 92</p>
<p>1 A I'm not referring to a percentile rule of 2 thumb in that. What are you referring to?</p> <p>3 Q (By Mr. Deihl) Okay. Well, earlier you told 4 me that you want to make sure that you're not into 5 the tail, which is a 15 percent -- 11:53</p> <p>6 A Yes.</p> <p>7 Q You identified as the top 15 percent, and, I 8 assume, the bottom 15 percent; correct? How did you 9 determine that you were in the middle in the bid 10 vector that you chose when you didn't look at the 11:53 \$500 bid -- well, forget about -- let me ask it 11 again. How did you determine that you were located 12 only within the 30th to 70th percentiles of the 13 distribution?</p> <p>14 A I did not know with certainty at the point of 11:53 15 designing that bid vector what percentile the 405 16 bid would obtain. I knew I wanted to push the 17 estimation of the willingness to pay distribution 18 out further than what the pretest data had done, the 19 pretest data I had looked at had done, so we made a 11:54 20 modest increase in that top bid from what the 21 pretest information had to the 405, but the team 22 felt that it was a bid that would still be within 23 the kinds of bounds we were interested in.</p> <p>24 Q And what kinds of bounds were you interested 11:54</p> <p>25 91</p>	<p>A Could you repeat the question, please?</p> <p>MR. DEIHL: Would you read the question? (Whereupon, the court reporter read back the previous question.)</p> <p>A The upper tail is defined in footnote E on 11:58 Page 116. It says the bids are 300, 400, 500, 700 and a thousand twenty each. These bids are in the upper 30th percentile tail.</p> <p>Q (By Mr. Deihl) On Page 119 of your article, you talk about it being important to avoid obviously 11:59 excessive bids. I'm looking at the bottom of Page 119. How do you determine whether a bid is obviously excessive?</p> <p>A Could you point to that paragraph, please?</p> <p>Q It is the second paragraph from the bottom of 12:00 the page, the second sentence from the bottom of that paragraph. It states, it is most important to avoid obviously excessive bids.</p> <p>A Yes, and then it says, CV -- CV researchers tend to know which bids fall into this category 12:00 before administering their final surveys.</p> <p>Q That was my question. How do CV researchers know which bids fall into this category before administering their final surveys?</p> <p>A I believe experienced CV researchers use their 12:00 93</p>

1 background knowledge, as well as information they've
2 collected from focus groups to determine a general
3 range of the preferences for the good that they're
4 researching, and at the point that they -- when they
5 get to the point of administering their final 12:01
6 survey, they tend to have a sense of the preferences
7 of the public they're trying to survey regarding the
8 good, and they would tend to know dollar amounts
9 that would probably fall beyond a reasonable -- the
10 range of willingness to pay that they're looking at, 12:01
11 that they think they're assessing.

12 **Q And did you do that in this case?**

13 A Which case are you referring to?

14 **Q The case that brings us here today.**

15 A Not this paper, but the case. 12:01

16 **Q Not this paper, uh-huh.**

17 A Did I do --

18 **Q You talked about how researchers tend to know**
19 **what the obviously excessive bids are based on the**
20 **pretest data that they've looked at, et cetera, et 12:02**
21 **cetera, and I asked you, did you do that in this**
22 **survey?**

23 MS. XIDIS: Objection to form.

24 A I think we've discussed that I was not a part
25 of the pretesting process and the focus group 12:02

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A I'm sorry, page --

Q 120. Actually, let's go back to Page 119, I'm
sorry. At the top of Page 119, and actually
throughout the paper, you talk about using a
double-bounded model, and the top of Page 119 you 12:04
state, the double-bounded model offers the second
chance, which makes it more -- much more robust to
poor bid designs than the single bounded model. You
didn't use a double-bounded model in the survey that
we're here on today, did you? 12:05

A That's correct.

Q Why didn't you?

A That decision was made before I came on the
project. I can't speak to it.

Q In your opinion, would it have been better to 12:05
have used a double-bounded model?

A Better in what sense?

Q In getting more accurate estimates of the
citizens of Oklahoman's willingness to pay for
cleanup of Tenkiller Lake and the Illinois River? 12:05

MS. XIDIS: Objection to form.

A A double-bounded approach would have allowed
us to efficiently explore further into the tail of
the distribution, so in that sense, we could have
moved closer to the public's willingness to pay than 12:05

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1 process, but the team has a -- several very highly
2 respected and well published researchers in
3 contingent valuation, and I believe their background
4 expertise, as well as the number of focus groups and
5 experience they had in person working with focus 12:02
6 group respondents and pretest respondents, I
7 believe, yes, that they had a very good sense of
8 what might be out of bounds in terms of the public's
9 willingness to pay.

10 **Q (By Mr. Deihl) So you relied upon the other 12:03**
11 **team members in determining whether or not there**
12 **were any obviously excessive bids?**

13 MS. XIDIS: Objection to form.

14 A I don't think there was ever a question of
15 there being an excessive bid in terms of the 12:03
16 proposed design that I brought forward.

17 **Q (By Mr. Deihl) And how did you make that**
18 **determination?**

19 A Nobody suggested that it was close to being
20 excessive, and given the pretest data, I knew that 12:03
21 the top of the bid range, which was \$405, would
22 probably get a response rate in the 30th percentile
23 or so, and that's certainly not excessive.

24 **Q Okay. Take a look at Page 120 of your 1995**
25 **article. 12:03**

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we did in this case. So in a sense, by taking the
single bounded approach, the approach we took, it
was another example of taking a conservative
approach, according to the NOAA panel guidelines.
Q (By Mr. Deihl) Now, at the bottom of Page 119 12:06
you say, it is most important to avoid obviously
excessive bids. We already talked about that a
little bit. What's the problem with obviously
excessive bids? What does it do to your estimate --
estimation of willingness to pay? 12:06

MS. XIDIS: Objection to form.

A Are you asking about the problem I've
identified in this specific paper --

Q (By Mr. Deihl) Yes.

A -- or do you want my general opinion? 12:07

Q I'd like to understand what you were saying in
this paper first.

A This paper explores the concept that maximum
likelihood estimation, which is a parametric
approach, which, again, is not relevant to our 12:07
study, but in this paper, it discusses maximum
likelihood estimation and the fact that estimates,
parameter estimates, as we referred to earlier, are
consistent, but it does not mean they're unbiased.
So what this paper does is explore the statistical 12:07

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1	bias that would occur if you estimate a maximum		doesn't fit the model well. In fact, really sticks
2	likelihood -- if you estimate maximum likelihood		out in terms of the model you've estimated.
3	parameters and use those parameters to estimate		Q And in this case, it would be these 15 percent
4	willingness to pay. So what it determines -- what		of the observations at the 2,000 bid level?
5	it compares are different approaches to design and	12:08	A In this McFadden, Leonard study. 12:12
6	how they might be -- result in a statistical bias in		Q Okay. And why was that an outlier problem in
7	terms of the estimation. And in general, the		the McFadden and Leonard study?
8	conclusion is that, in fact, a statistical bias is		A I believe they claimed that it was.
9	extremely small, like about 1 percent, but of the		Q Did you think it was?
10	designs that got the highest bias, and again, I	12:08	A I think my statement implies that I don't 12:12
11	believe they were fairly small, as well, the ones		think it makes sense to call those -- that result an
12	that had the most bias were the designs that focused		outlier. I believe it means that the model is not
13	on the tails of the distribution as opposed to the		fitting the data well.
14	middle of the distribution, which is one of the --		Q What do you mean when you say the model is not
15	so this is one of the pieces of research that has	12:08	fitting the data well? 12:12
16	led me to come to my general rules of thumb that		A Again, we're talking about parametric models.
17	I've established in the literature on where the most		Q Okay. And again, a parametric model is just a
18	informative bid points would lie and where they		model that uses a parametric approach for
19	won't.		estimating; correct?
20	Q Okay. On Page 120 of this article, near the	12:09	A A mathematical functional form to describe how 12:12
21	bottom of the page, the last paragraph, second		people would be responding as opposed to just saying
22	sentence, you state, of course, the statement that		that they did or didn't say yes or no.
23	15 percent of the observations at the \$2,000 bid		Q Uh-huh.
24	level of all outliers seem extreme. The high		A And one of the main problems with specifying a
25	positive response rates these studies obtain in the	12:10	parametric functional form up front is that that 12:13
	98		100
1	tails indicate that there is much more than an		already has a shape to it, and if you estimate that
2	occasional outlier problem with the data. What are		model and you overlay it with the actual data
3	you referring to there?		responses that you collected, if you have, for
4	A I am referring to a study that was done by		example, a bid level that has a response that looks
5	McFadden and Leonard, and they're cited in this	12:10	quite different than the curve that you drew based 12:13
6	section, where they -- and, in fact, their paper was		on the model that you estimated, then one thing you
7	one of the reasons I wrote this paper, where they		could say is that's an outlier, it doesn't -- it's
8	claim that they have developed a design that results		just a statistical anomaly that doesn't fit with my
9	in a biased willingness to pay estimate, and I wrote		model. Or the other thing you could say is, my
10	this paper in response to their claims to say that	12:10	model is not fitting the data very well. Perhaps I 12:13
11	as I said, maximum likelihood estimation is biased,		have the wrong functional form or perhaps I have
12	but in a very small way, and that's what I showed.		specified the wrong set of parameters.
13	And as a follow-up to that, my comment is that		Q In your model?
14	basically, that if you have found outliers in your		A In the model.
15	model, which are basically poorly fitting models	12:11	Q In the Stratus survey, what percentage said 12:13
16	where at some point along the distribution you're		yes to the top bid of \$405?
17	getting results that don't fit the distribution		A Can I look that up?
18	you're trying to estimate, then if you have a lot of		Q Yes, you may.
19	them, they're not what we call outliers from a		A This is after the Tab 6?
20	statistical sense, what you have is a poorly fitting	12:11	Q I think you'll find the main survey document 12:14
21	model.		after Tab 6.
22	Q When you refer in this sentence that I read to		A Could you repeat the question, please?
23	you to an occasional outlier problem, what is an		Q My question was, what percentage said yes to
24	outlier problem?		the top bid of \$405?
25	A An outlier is when you have a data point that	12:11	A In which version of the survey? 12:14
	99		101

1	Q In the main version of the survey.		they didn't mean it truthfully.
2	A 34.2 percent.		Q How do you model for yea-saying?
3	Q What page are you reading from, please?		A I don't think there's an established approach
4	A 6-2.		in the literature on modeling for yea-saying. I
5	Q And what percent said yes to the top bid in 12:15		have suggested one in this paper, but I don't think 12:18
6	the scope version of the survey?		there's an established approach.
7	A About 28.8 percent.		Q Do you agree with the approach that you
8	Q Do you believe there's an outlier problem with		suggested in this paper?
9	this survey?		A I think I make clear in that paragraph and the
10	A No, I don't. 12:15		rest of this paper that if you believe you have a 12:19
11	Q Why not?		problem — my comment in this paper is if you
12	A An outlier refers to a situation where you		believe you have a problem with your data, you can
13	have a data point that sticks out from a parametric		incorporate parameters in your model to address that
14	model you've estimated. We didn't estimate a		issue. I don't say whether or not any specific
15	parametric model, so there are no data points that 12:16		dataset does or does not have that problem. I'm 12:19
16	stick out as odd.		demonstrating a model that can be used to address
17	Q You've never estimated a parametric model on		what someone might consider a problem, for example,
18	this — in connection with this survey?		with McFadden and Leonard, who said they had a
19	A I worked with parametric models as the data		problem.
20	was coming in, but we did not use any parametric — 12:16		Q Do you think you had a problem with yea-saying 12:19
21	well, we didn't use parametric models to estimate		in the Stratus survey?
22	willingness to pay. We do use a parametric model in		A No.
23	the construct validity section.		Q Why not?
24	Q So you did use parametric models in the		A Because I think the survey was carefully
25	construct validity section? 12:16		constructed. The scenario was carefully 12:20
	102		104
1	A Yes.		constructed, as well as the vote question, so that
2	Q And what was the purpose of using parametric		respondents would believe their votes were
3	models in the construct validity section?		consequential and would believe the scenario as
4	A That section was intended to evaluate whether		given, and I believe if you believe your votes are
5	responses were consistent were what we expect from 12:17		consequential and you understand the scenario, 12:20
6	economic theory, and to do that, you want to		you're going to vote with respect to your true
7	estimate a model that includes variables that you		willingness to pay.
8	think matter from a theoretical perspective, and the		Q Now, you — the model that you suggest in this
9	most straightforward way to do that is use a		article to model yea-saying only works with a
10	parametric model. 12:17		parametric estimator, not with a nonparametric 12:20
11	Q And that's what you did here?		estimator; correct?
12	A In the construct validity —		A That's correct, yes.
13	Q Yes.		MR. DEIHL: Why don't we take a break for
14	A — section, yes.		a tape change.
15	Q Take a look again at your article, the 1995 12:17		VIDEOGRAPHER: We're off the record, 12:17 12:21
16	article, please, and turn to Page 121. You state on		p.m.
17	Page 121 at the bottom of the first full paragraph,		(Following a lunch recess at 12:21 p.m.,
18	and I quote, "The unexpectedly high positive		proceedings continued on the record at 1:23 p.m.)
19	response rates observed in the tails might be		VIDEOGRAPHER: We are back on the record.
20	identified as a systematic bias or a 'yea saying' 12:17		The time is 1:19 p.m. 01:23
21	and modeled accordingly; do you see that sentence?		Q (By Mr. Deihl) Dr. Kanninen, before our lunch
22	A Yes.		break we were talking about yea-saying. How, if
23	Q What is yea-saying?		anything, or what, if anything, did the Stratus team
24	A Yea-saying in our literature refers to the		do to adjust for the possible warm glow effect of
25	possibility that — that people will say yes when 12:18		yea-sayers? 01:24
	103		105

1 A I do not have an answer for that. You'd have
2 to talk to some of the other members of the team.
3 **Q Do you keep any kind of a library or**
4 **compilation of contingent valuation studies at your**
5 **office? 01:24**
6 A I have a filing cabinet and piles of papers,
7 yes.
8 **Q Do you refer to those other contingent**
9 **valuation studies from time to time in creating bid**
10 **vectors? 01:24**
11 A Do I -- do I refer to contingent valuation
12 papers in creating bid vectors?
13 **Q Contingent valuation studies.**
14 A No.
15 **Q Okay. Do you do anything to track contingent 01:25**
16 **valuation studies as they're prepared in the**
17 **country?**
18 A No.
19 **Q Going back to your invoice -- let me find the**
20 **exhibit number. I believe it's Exhibit No. 6. 01:25**
21 **That's it.**
22 A Oh, yes, it was the second page.
23 **Q Do you have that in front of you?**
24 A Yes.
25 **Q Exhibit No. 6? 01:26**
106

estimation in connection with this survey?
A I don't recall discussing the pros and cons of
using that method.
Q In your opinion, when can yea-saying be a
problem in connection with CV service? 01:28
A When the researcher -- when the researchers
suspects there might be some.
Q Are there particular types of matters that are
more likely to result in yea-saying?
A What do you mean by matter -- what types of 01:29
matters?
Q Like environmental matters or market study
matters or --
A I think at this point in the contingent
valuation literature, the concern about yea-saying 01:29
has been addressed by improvements made in the
development of surveys, by improvements made in the
understanding how to formulate a vote question, how
to present respondents with neutral information and
those type of survey design issues, so the problem 01:29
of yea-saying that you're raising is a problem that
had been raised in the literature and that I talked
about, as you point out in the 1995 paper, and was
something that people had discussed then. But I
think at this point, most experienced contingent 01:30
108

1 A Yes.
2 **Q We already talked about the five-and-a-quarter**
3 **hours you spent between August 31st and September**
4 **3rd of 2008. You've also got an entry for 29.25**
5 **hours between September 15th and September 23rd, 01:26**
6 **2008. Can you describe for me what you were doing**
7 **during that time period?**
8 A I believe that was a stage before any of the
9 final dataset had come in, so I was working with
10 Stratus staff to think about how variables would be 01:27
11 defined and think about how we would want to
12 approach estimating the models we were interested
13 in.
14 **Q You've said several times that you had decided**
15 **upon a nonparametric approach to estimation early 01:27**
16 **on. Did you agree with the rest of the team's**
17 **decision to use a nonparametric approach to**
18 **estimation?**
19 A Yes.
20 **Q Was there any discussion during that initial 01:28**
21 **phone call that you had back in early September**
22 **about the wisdom of using such an approach?**
23 A I don't recall discussing the wisdom, no.
24 **Q Did you discuss anything about whether or not**
25 **the team should use a nonparametric approach to 01:28**
107

valuation researchers know how to address any
concerns they might have about something like that
as they design the survey, and by the time they get
to that stage and collect that information, I do not
think the experienced contingent valuation 01:30
researchers are concerned about yea-saying.
Q Do you know what the Stratus team in
connection with this survey to design the survey in
such a way that there were not concerns about
yea-saying? 01:30
A I was not involved in that part of the
process.
Q Do you know whether or not the Stratus team
focused on designing the survey in such a way that
there would not be problems with yea-saying? 01:30
A I am quite sure that it was very important to
all the members of the team who have a vast amount
of experience collecting this type of data that they
wanted to comply with the NOAA panel's guidelines on
presenting a scenario in neutral terms, and in 01:31
presenting the type of vote question that the NOAA
panel guideline suggests, and in keeping all of
their language and their procedures conservative as
the NOAA panel suggests, and I believe they were
very focused on that and that they did a very good 01:31
109

1	MS. XIDIS: Objection to form.		yea-sayers, didn't it?	
2	A I think you misworded that question a bit.		MS. XIDIS: Objection to form.	
3	Q (By Mr. Deihl) Okay. Let me try again. Does		A I don't think there was -- there was an issue	
4	it surprise you that the percent of those voting for		with anyone believing it was a test that we should	
5	the program at the \$405 bid level -- let's try 01:37		have done. 01:41	
6	again. Does it surprise you that the difference		Q (By Mr. Deihl) Why not?	
7	between those voting for the program at the \$405 bid		A As far as I know, it's not standard in the	
8	level is the lowest -- is the lowest at that level		literature to do that.	
9	between the base program and the scope program?		Q When would you, as a researcher, suspect that	
10	MS. XIDIS: Objection to form. 01:38		there was a problem with yea-saying? 01:41	
11	A No.		A I would have to defer to my colleagues on that	
12	Q (By Mr. Deihl) Why not?		question.	
13	A Data to me represents the respondent -- the		Q So you don't have an opinion about how to	
14	responses of the survey sample, which in this case		determine whether or not there's a problem with	
15	is members of the public of Oklahoma. I'm not 01:38		yea-saying? 01:41	
16	generally surprised when they reveal their		A It is usually -- as I said, yea-saying isn't	
17	preferences. I take their responses as what they		considered to be a problem at this point in the	
18	believe to be their responses. There's nothing		development of contingent valuation as a	
19	surprising about people's preferences.		methodology. It was something that was discussed in	
20	Q Does the smaller percent difference at the 01:38		the early '90's as something to explore and pursue, 01:42	
21	\$405 bid level compared to the other bid levels tell		and over time, as the development of better survey	
22	you anything about the survey design?		techniques and better questioning techniques and	
23	A About the survey design?		better wording techniques have taken place, the idea	
24	Q Uh-huh.		of yea-saying being a problem isn't something that	
25	A It doesn't tell me anything in particular that 01:39		researchers are currently concerned about. If a 01:42	
	114		116	
1	I can think of.		researcher has the impression, through focus groups	
2	Q Does it tell you anything about the bid		and pretesting, that that's going on, then it's	
3	vectors that were chosen?		something that they would want to address at that	
4	A It might have been interesting to explore more		stage. I believe that my colleagues would have	
5	of the distribution, but given the costs, I think 01:39		recognized a phenomenon like that and would have 01:42	
6	this is what we have.		addressed it through question wording, the	
7	Q When you say explore more of the distribution,		formulation of the vote question, the development of	
8	what do you mean?		the scenario and that sort of thing. The fact that	
9	A It's just what I said earlier. The team		they did not mention it as a problem at the point	
10	decided to take a conservative approach and not 01:39		that I entered the survey indicates to me that it 01:43	
11	explore further than the 30th percentile of this		was either -- if they ever thought there was a	
12	distribution.		problem with it, they had resolved it already, and	
13	Q And if you had explored above the 30th		that they did not, at that point, think it was a	
14	percentile, what might it have told you about the		problem with it.	
15	citizens of Oklahoma's response to the survey 01:40		Q Do you have an opinion, sitting here today, 01:43	
16	materials?		what the indicators of a yea-saying problem are?	
17	A It would have given us more information about		A No, I don't have an opinion on that, no.	
18	people's preferences above \$405. We made the		Q So in this case, you relied upon your	
19	assumption, by using this bid vector, that nobody		colleagues to determine whether or not there was a	
20	had a willingness to pay over \$405. That's a very 01:40		yea-saying problem, and you trusted them to conclude 01:43	
21	conservative assumption to make considering that		that there was not such a problem; is that correct?	
22	over 30 percent of people said they had at least a		A It was not an explicit question that I asked	
23	willingness to pay \$405.		and drew conclusions about.	
24	Q It also prevented you from testing what		Q You were assuming that they had concluded that	
25	percent of the respondents might have been 01:40		there wasn't a problem with yea-saying? 01:43	
	115		117	

<p>1 A Could you repeat that, please?</p> <p>2 MR. DEIHL: Would you read it back,</p> <p>3 please?</p> <p>4 (Whereupon, the court reporter read back</p> <p>5 the previous question.) 01:44</p> <p>6 A As I said, I didn't explicitly make that</p> <p>7 assumption, but I was comfortable with the data, and</p> <p>8 did not suspect that there might be a yea-saying</p> <p>9 problem.</p> <p>10 Q (By Mr. Deihl) How would you yourself 01:44</p> <p>11 determine, in a hypothetical survey, whether or not</p> <p>12 there was a yea-saying problem, or is that just</p> <p>13 something you don't do as a bid vector design</p> <p>14 person?</p> <p>15 A Yeah, I would say I haven't had direct 01:44</p> <p>16 experience with that.</p> <p>17 Q Okay. Is it a common practice in analyzing</p> <p>18 contingent valuation results to disaggregate</p> <p>19 response rates by income groups?</p> <p>20 A Could you repeat that question, please? 01:45</p> <p>21 Q Is it a common practice in analyzing</p> <p>22 contingent valuation results to disaggregate</p> <p>23 response rates by income groups?</p> <p>24 A I do not necessarily think that's a common</p> <p>25 practice, no. 01:45</p> <p style="text-align: center;">118</p>	<p>When you take one factor and look at a decision</p> <p>that's made based on that one factor, you are not</p> <p>accounting for all the other confounding factors</p> <p>that may be involved and that may actually have</p> <p>either more of an impact or an inverse impact on the 01:47</p> <p>decision that was made, so the only appropriate way</p> <p>to evaluate the validity of vote questions, in my</p> <p>opinion, is to look at a multivariate type of model.</p> <p>Q Did you do that in this case?</p> <p>A Yes. 01:47</p> <p>Q When you look at it as a multivariate model,</p> <p>what relationship would you expect to see between</p> <p>response rates and income?</p> <p>A I think it can vary very much by the good</p> <p>involved. 01:48</p> <p>Q In the case of the good that people were</p> <p>buying here, do you have an expectation of what</p> <p>relationship you would see between response rates</p> <p>and income?</p> <p>A I did not have a prior expectation, no. 01:48</p> <p>Q You wouldn't have — you would not have</p> <p>expected respondents in a higher income group to be</p> <p>more likely to vote yes at a higher bid number?</p> <p>A Some people have that expectation about income</p> <p>and willingness to pay for something like water 01:48</p> <p style="text-align: center;">120</p>
<p>1 Q Does it ever occur?</p> <p>2 A Probably.</p> <p>3 Q Do you have any experience in disaggregating</p> <p>4 response rates by income groups?</p> <p>5 A I believe we did so in this report. 01:45</p> <p>6 Q Have you ever done it in any other reports?</p> <p>7 A I do not know for sure.</p> <p>8 Q Why did you do it in connection with this</p> <p>9 report?</p> <p>10 A The NOAA panel recommends looking at certain 01:45</p> <p>11 variables and doing cross-tabs to look at how those</p> <p>12 variables and willingness to pay are related.</p> <p>13 Q And is income group one of the variables that</p> <p>14 the NOAA panel recommends looking at?</p> <p>15 A Not income groups, just income. 01:46</p> <p>16 Q Does disaggregating response rates by income</p> <p>17 groups help determine the validity of the survey</p> <p>18 results?</p> <p>19 A I don't believe it's particularly helpful, no.</p> <p>20 Q Why not? 01:46</p> <p>21 A People respond to vote questions and any kind</p> <p>22 of decision making question with a large number of</p> <p>23 factors in their heads, and many of those factors</p> <p>24 are highly correlated with each other or inversely</p> <p>25 correlated with each other to all different extents. 01:47</p> <p style="text-align: center;">119</p>	<p>clarity. I do not have that expectation, no. I'm</p> <p>not saying I have the inverse expectation. I do not</p> <p>have an expectation for how income and preferences</p> <p>for water clarity would be related.</p> <p>Q Dr. Kanninen, I've handed you a document that 01:48</p> <p>came out of your considered by materials entitled</p> <p>positive response rates to willingness to pay</p> <p>question. Do you have that in front of you?</p> <p>A Yes.</p> <p>Q What is this document? 01:49</p> <p>A Do you know the date on the file?</p> <p>Q I do not know the date.</p> <p>A Without knowing the date, I can — what I can</p> <p>say for sure is this was done very early on with a 01:50</p> <p>preliminary dataset because later in the process, I</p> <p>didn't work on this particular table-making</p> <p>analysis. So it's just a table that takes some</p> <p>amount of data, and this was on my hard drive. I am</p> <p>sure that this particular document was not shared</p> <p>with the group, I'm not quite sure what I was 01:50</p> <p>planning to do with it, but it was obviously a table</p> <p>I made just for myself, because I didn't label it</p> <p>completely, and I didn't give number of</p> <p>observations, for example, so it was something I did</p> <p>early on, maybe even just to set up the table 01:50</p> <p style="text-align: center;">121</p>

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	<p>format. And in the table, it divides respondents by four income categories. Less than 20,000, 20,000 to 50,000, 50 to a hundred thousand, and over a hundred thousand, and then gives their vote percentages by the different bid amounts. 01:50</p> <p>Q Taking a look at the income less than \$20,000 bid row, is it my understanding that as we move from left to right across this table, the bid amounts are increasing?</p> <p>A The bid amounts, as you're moving to the right, are increasing, yes. 01:51</p> <p>Q And so under the income less than 20,000, for example, on the column that's labeled \$10 bid amount, the percent responding yes in this table is .82; is that -- am I reading that correctly? 01:51</p> <p>A Yes.</p> <p>Q Okay. Based on this table, does it seem reasonable to you that 65 percent of the respondents with income less than \$20,000 were more than two times as likely to vote yes at the highest bid amount, the \$405 number, than any other income group? 01:52</p> <p>A From a statistical perspective, I have no reason to disbelieve that this would be the case. It is very likely, especially since this is early in 122</p>	<p>in your considered by --</p> <p>A When I ran this analysis?</p> <p>Q -- materials; correct?</p> <p>A I'm sorry to interrupt.</p> <p>Q Yes. 01:53</p> <p>A It would certainly have been no later than the date that this was put together. It may be that I opened the file and changed a typo and the date changed, but it would certainly indicate that I produced this no later than whatever date is on that file. 01:54</p> <p>Q Okay. Do you recall changing this table at any point in time?</p> <p>A I don't even recall making this table, so I don't recall changing it. 01:54</p> <p>Q In your -- strike that. Did you include any results like this in your final report? And when I say like this, I don't mean the actual numbers here, but I do mean a table that compares percent voting yes by income level? 01:54</p> <p>A I believe we have a couple of tables of this format, something maybe like this format in the report, yes.</p> <p>Q When you first began working on this project back in early September of 2008, did you think that 01:55</p> <p>124</p>
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	<p>the process, that that particular cell was a function of only a couple of observations. So getting any particular percentage response is not surprising at low numbers of observations.</p> <p>Q Describe for me how you received the raw data that you were plugging into this type of a table? Was Wes-Stat sending you the numbers as they were coming in? 01:52</p> <p>A Wes-Stat did not send me anything.</p> <p>Q Okay. 01:53</p> <p>A I was able to access the dataset on a server that Stratus had on their end. So when the data -- when the updates of the data came in, a file was posted on that server.</p> <p>Q And that was a continual process throughout the fall of 2008? 01:53</p> <p>A Yes.</p> <p>Q On so if we wanted to know when you ran this particular table, we'd just need to look at the date in your considered by materials, that ought to tell us? 01:53</p> <p>A That would probably -- repeat that question, please.</p> <p>Q If we wanted to know when you ran this particular table, we'd just need to look at the date 01:53</p> <p>123</p>	<p>the willingness to pay estimator would be based on a Logit model?</p> <p>A Would you please repeat that question?</p> <p>Q When you first began working on this project, did you think that the willingness to pay would be based on a Logit model? 01:55</p> <p>A No, I didn't.</p> <p>Q Did you think that the willingness to pay would be based on a Turnbull estimator?</p> <p>A Could you define what you mean by Turnbull? 01:55</p> <p>Q I'm not an econometric. I understand that there's a Turnbull estimator; am I incorrect about that?</p> <p>A There are a couple of papers by Turnbull in 1974 and 1976. 01:56</p> <p>Q Okay.</p> <p>A Where he defines a procedure for estimating what he calls survival functions, because he's working in a different literature. So you're asking me if I expected to estimate the -- to use the procedure that he defined in that paper? 01:56</p> <p>Q I guess I'll ask you, what's your understanding of what a Turnbull estimator is? Is that your understanding?</p> <p>A The Turnbull estimator is an estimator that is 01:56</p> <p>125</p>

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	<p>used -- it is used to estimate responses when you have data in three different classes. When you have -- using our language, because he wrote in statistical literature. When you have yes votes, when you have no votes, and when you have exact estimates of willingness to pay. 01:57</p> <p>Q Okay. I understand what you mean by a yes no -- a yes vote and a no vote. What do you mean by when you have exact estimates of willingness to pay?</p> <p>A That's where you asked people what are you willing to pay, they gave an amount. 01:57</p> <p>Q You asked them an open-ended question?</p> <p>A Yes.</p> <p>Q What are you willing to pay?</p> <p>A Yes. 01:57</p> <p>Q And that's your understanding of what a Turnbull estimator is?</p> <p>A That is what a Turnbull estimator is.</p> <p>Q Okay. You had mentioned these two different papers, and I just want to make sure we're on the same page as far as what the definition of a Turnbull estimator is. That's your definition, what you just said; correct? 01:58</p> <p>A Could you repeat the question?</p> <p>Q When I first asked you about a Turnbull estimator, you asked me whether I was talking about a paper, I don't remember the date, or a different paper, I don't remember the date, by somebody named Turnbull, and I said, I don't know, I want to know what your definition of a Turnbull estimator is. 01:58</p> <p>A Uh-huh.</p> <p>Q Is the definition you just gave me your definition of what a Turnbull estimator is?</p> <p>A Almost. I should clarify that the Turnbull is an estimation procedure. 01:58</p> <p>Q Okay. What -- what is the Turnbull estimation procedure, what do you mean by that?</p> <p>A It is an iterative procedure where if you have this complex form of data in these three classes, you would be unable to estimate the distribution function in basically one shot, but you would need to use starting values, and -- and then estimate the model using those starting values, and then -- with the data, and then update your estimates based on what you get out of that. It's what's called a self-consistent estimator. You need to iterate around until what you get out of the estimation is basically what you started with. 01:59</p> <p>Q Dr. Kanninen, I handed you what's been marked for purposes of identification as Deposition Exhibit 02:00</p>	<p>No. 12, which is an E-mail from Megan Lawson to the team dated September 18th, 2008, enclosing certain files for your review, and copies of those files are attached to the E-mail. Do you have that in front of you? 02:01</p> <p>A Yes.</p> <p>Q And you would have received this E-mail on or about -- on Thursday, September 18th; is that correct?</p> <p>A Yes. 02:01</p> <p>Q Who asked the Stratus staff to prepare these analyses?</p> <p>A I do not know.</p> <p>Q Did you ask them to prepare these analyses?</p> <p>A No, I did not. 02:01</p> <p>Q These analyses, according to the E-mail cover sheet, include what's called a Turnbull estimates 091808.LXS, which contain Turnbull estimates of the mean and median for the pilot 2, pilot 2 and FG-14 combined, and scope respondents for the FG-14; do you see that reference? 02:02</p> <p>A I believe so.</p> <p>Q Okay. What's your understanding of what these Turnbull estimates were supposed to be?</p> <p>A In these attachments? 02:02</p>
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	<p>estimator, you asked me whether I was talking about a paper, I don't remember the date, or a different paper, I don't remember the date, by somebody named Turnbull, and I said, I don't know, I want to know what your definition of a Turnbull estimator is. 01:58</p> <p>A Uh-huh.</p> <p>Q Is the definition you just gave me your definition of what a Turnbull estimator is?</p> <p>A Almost. I should clarify that the Turnbull is an estimation procedure. 01:58</p> <p>Q Okay. What -- what is the Turnbull estimation procedure, what do you mean by that?</p> <p>A It is an iterative procedure where if you have this complex form of data in these three classes, you would be unable to estimate the distribution function in basically one shot, but you would need to use starting values, and -- and then estimate the model using those starting values, and then -- with the data, and then update your estimates based on what you get out of that. It's what's called a self-consistent estimator. You need to iterate around until what you get out of the estimation is basically what you started with. 01:59</p> <p>Q Dr. Kanninen, I handed you what's been marked for purposes of identification as Deposition Exhibit 02:00</p>	<p>Q Yes.</p> <p>A I do not know.</p> <p>Q Okay. Do you know why you were sent these attachments?</p> <p>A The sender states it is to prepare for a conference call. 02:02</p> <p>Q Did you talk about these attachments during the conference call?</p> <p>A I do not recall.</p> <p>Q If you turn to the attachment, I think it's about the fourth attachment in the pile that's labeled Turnbull estimators using pilot data and FG-14 main respondents? 02:03</p> <p>A Yes.</p> <p>Q It's not the graph, it's actually -- it looks like this. (Indicating). 02:03</p> <p>A Could you repeat the title?</p> <p>Q It's entitled Turnbull estimators using pilot data and FG-14 main respondents, number equal 249, six respondents did not vote; do you have that in front of you? 02:04</p> <p>A Yes.</p> <p>Q What does this purport to estimate, do you know?</p> <p>A What was the question? 02:04</p>

<p>1 Q Do you know what this page is?</p> <p>2 A It looks like it presents voting data for 249</p> <p>3 responses for the pilot data and the focus groups –</p> <p>4 I'm sorry, the pilot data and a focus group, and it</p> <p>5 looks like it follows a procedure to estimate what 02:04</p> <p>6 might be a Turnbull procedure, but I would have to</p> <p>7 study it carefully to verify that.</p> <p>8 Q Well, it says at the top it's a Turnbull</p> <p>9 estimator, does it not?</p> <p>10 A That's what it says, but I would have to study 02:05</p> <p>11 it to verify that. I'm not sure if that's what it</p> <p>12 is.</p> <p>13 Q Okay. How could you tell whether or not the</p> <p>14 person that prepared this used a Turnbull estimator?</p> <p>15 A I would have to study her – the code she 02:05</p> <p>16 used.</p> <p>17 Q So you'd have to get into the underlying code?</p> <p>18 A Yes.</p> <p>19 Q There's a note on this page that says,</p> <p>20 estimated willingness to pay is highly sensitive to 02:05</p> <p>21 the percentage voting yes at 375; do you see that?</p> <p>22 A Yes.</p> <p>23 Q What did that note mean to you?</p> <p>24 A What it means to me is that the person doing</p> <p>25 this analysis was trying to provide helpful 02:06</p> <p style="text-align: center;">130</p>	<p>unrestricted estimator, the bottom column, says bid</p> <p>amount 375, number of yeses 34, number of noes 13.</p> <p>A Yes, you're misreading the table.</p> <p>Q Okay.</p> <p>A If you look at the top, the titles are off 02:08</p> <p>center. Actually, the table is off center to the</p> <p>titles. The first column is the bid amount. The</p> <p>column you're thinking are percent yeses are the</p> <p>percent offered, meaning the total number of people</p> <p>who were asked each of those bid amounts. 02:08</p> <p>Q Okay.</p> <p>A The next column is the percent yeses, and the</p> <p>column after that is the percent noes.</p> <p>Q So 34 people were offered the \$375 bid amount?</p> <p>A According to this table, yes. 02:09</p> <p>Q And 13 of them accepted that bid amount?</p> <p>A That's correct.</p> <p>Q Don't the Turnbull and ABERS procedures arrive</p> <p>at the same willingness to pay when the distribution</p> <p>of the data is monotonically decreasing? 02:09</p> <p>A Yes, they do.</p> <p>Q Hasn't the Turnbull procedure been used in</p> <p>other CV studies?</p> <p>A I believe the name Turnbull has been used to</p> <p>apply to estimators in other studies. I do not know 02:09</p> <p style="text-align: center;">132</p>
<p>1 information to the group.</p> <p>2 Q Do you know who did this analysis?</p> <p>3 A This was done by Megan Lawson.</p> <p>4 Q Who is Megan Lawson?</p> <p>5 A She was on the staff at Stratus. I do not 02:06</p> <p>6 know if she is now.</p> <p>7 Q What was her role at Stratus?</p> <p>8 A I don't know what her title is.</p> <p>9 Q Did you work with Megan Lawson?</p> <p>10 A Yes, I worked with her on occasion. 02:07</p> <p>11 Q You worked with her as part of the work you</p> <p>12 did on this survey; correct?</p> <p>13 A I occasionally worked with her to work on some</p> <p>14 parts of the survey, yes.</p> <p>15 Q Okay. In the pretest, how many voted yes at 02:07</p> <p>16 the 375 bid?</p> <p>17 A According to this table?</p> <p>18 Q Uh-huh.</p> <p>19 A It looks like 13.</p> <p>20 Q If I look at the tail that says unrestricted 02:07</p> <p>21 estimator 375 bid, number of yeses, it says 34,</p> <p>22 number of noes, it says 13; am I reading that wrong?</p> <p>23 A I'm sorry, I was looking at the table above.</p> <p>24 Tell me what you're reading again.</p> <p>25 Q There's a table on this page entitled, 02:08</p> <p style="text-align: center;">131</p>	<p>if they were used correctly.</p> <p>Q Wasn't it used in the Exxon Valdez study?</p> <p>A I'm not sure.</p> <p>Q You worked on that study, you just don't know?</p> <p>A I worked on preliminary pretest data on that 02:10</p> <p>study. I did not work on the final.</p> <p>Q At least as of September 18th, 2008, someone</p> <p>at Stratus, I guess it's Megan Lawson, was running</p> <p>estimates using the Turnbull estimation technique;</p> <p>correct? 02:10</p> <p>A I can't verify that, as I said. I would need</p> <p>to study her code.</p> <p>Q Did you rely on Megan to return these sorts of</p> <p>estimates for you?</p> <p>A No. 02:10</p> <p>Q In nonparametric estimators like the Turnbull</p> <p>and the ABERS, none of the respondent</p> <p>characteristics is factored into the analysis; isn't</p> <p>that correct?</p> <p>A That's correct. 02:11</p> <p>Q I've handed you what's been marked as</p> <p>Deposition Exhibit No. 13, which is an E-mail dated</p> <p>November 13th, 2008 from you to Megan Lawson. Do</p> <p>you have that in front of you?</p> <p>A Yes, I do. 02:12</p> <p style="text-align: center;">133</p>

1	Q There are a series of E-mails on this page.		materials that were presented in the final report?	
2	The first E-mail is from Megan to you, and she asks,		A Yes, that's correct.	
3	can you put the KM code in the analysis folder? I'm		Q Why did you use the ABERS estimate instead of	
4	dying to see it. What's your understanding of what		the KM estimator that you had developed?	
5	KM code is? 02:12		A The ABERS estimator is established in the peer 02:17	
6	A KM stands for Kaplan-Meier.		reviewed literature as the appropriate approach for	
7	COURT REPORTER: Pardon?		estimating the type of data we had.	
8	A Kaplan-Meier, K-A-P-L-A-N - M-E-I-E-R.		Q If the ABERS estimator is established in peer	
9	Q (By Mr. Deihl) And when she refers to the		review literature as the proper estimator for the	
10	Kaplan-Meier code, what is she referring to? 02:12		type of data that you had, why did you bother to 02:17	
11	A The Kaplan-Meier code in this case is		write code for the KM estimator?	
12	referring to a code that I developed to estimate		A It was the same code.	
13	that model.		Q So KM code and ABERS estimator are the same	
14	Q So it's your own -- an estimator that you		code?	
15	developed yourself? 02:12		A That's correct. 02:17	
16	A I didn't develop the estimator. I wrote code		Q Compared to Turnbull, what are the ABERS'	
17	in Stata that efficiently estimated that estimator.		estimators advantages in this particular	
18	Q The last E-mail we looked at, it looked like		application?	
19	Megan Lawson had been running some estimations using		A Compared to Turnbull?	
20	the Turnbull technique. Why did you decide to go 02:13		Q Yes. 02:18	
21	with the KM estimator instead?		A They're equivalent.	
22	A Are you asking why I decided that or the team?		Q They're exactly the same?	
23	Q Who decided to make that change?		A That's correct.	
24	A I don't recall.		Q If you were going to use those estimators,	
25	Q Were you involved in the decision? 02:14		you'd come up with the exact same estimation number? 02:18	
	134		136	
1	A At that point, I was not involved in the		A As the Turnbull established in the peer	
2	decision, no.		reviewed literature, they are equivalent, yes.	
3	Q You provided the code that was used in		Q Okay. We should look at the report, Stratus	
4	estimating using the KM methodology; is that		report Page 7-5, please.	
5	correct? 02:15		A Page 7-5? 02:18	
6	A What do you mean by provided?		Q Yes.	
7	Q You e-mailed it to or posted it on the Web		A Oh.	
8	page for use by the team members?		Q Did you have any involvement in writing this	
9	A Yes, that's correct, I wrote code and posted		section of the report?	
10	it in the analysis folder for the rest of the team 02:15		A In writing this section of the report? 02:19	
11	to access and the Stratus staff.		Q Yes.	
12	Q And did you write that code for the purpose of		A You're talking about just this page?	
13	this project?		Q Yes.	
14	A Yes.		A I do not believe I wrote this section, no.	
15	Q Why did the team later abandon the KM 02:15		Q Did you have any input to this section? 02:20	
16	estimator?		A I'm sure that I edited it.	
17	A The team did not abandon the KM estimator.		Q If you'll direct your attention to the middle	
18	Q Did the fact that the distribution of yes		paragraph on Page 7-5, it refers to the graph in	
19	votes was not monotonically decreasing affect your		Figure 7.2?	
20	choice of an estimator? 02:16		A Uh-huh. 02:21	
21	A I do not believe so.		Q Do you see that? Which is on the following	
22	Q Can the KM estimator deal with nonmonotonic		page.	
23	distributions of PR yes by bid?		A Yes.	
24	A I believe that it does, but I am not sure.		Q The area under the graph, under the black line	
25	Q Didn't you use the ABERS estimate in the 02:16		on that graph, how was that area calculated? How 02:21	
	135		137	

<p>1 did you arrive at that graph?</p> <p>2 A I'm sorry, could you ask that again?</p> <p>3 Q How did you arrive at the estimator that's</p> <p>4 reflected on — at the estimate that's reflected on</p> <p>5 the graph Figure 7.2? 02:21</p> <p>6 A How did I?</p> <p>7 Q The team.</p> <p>8 A You're just asking how I calculated it?</p> <p>9 Q Yes, uh-huh.</p> <p>10 A As you can see, because it's a stair-step 02:21</p> <p>11 function, you can literally draw a series of</p> <p>12 rectangles that fills that space under the graph, so</p> <p>13 it's a matter of measuring those rectangles and</p> <p>14 adding them up.</p> <p>15 Q And the result would be the same whether you 02:22</p> <p>16 used the ABERS estimator or the Turnbull method;</p> <p>17 correct?</p> <p>18 A The Turnbull — the ABERS estimator and the</p> <p>19 Turnbull model, as developed by Turnbull in his 1974</p> <p>20 paper, are equivalent to the type of data that we 02:22</p> <p>21 have, yes.</p> <p>22 Q In the report by Desvousges and Rausser, they</p> <p>23 state that the willingness to pay derived from the</p> <p>24 ABERS estimator will consistently be equal to or</p> <p>25 higher than the willingness to pay the Riffe and the 02:22</p> <p>138</p>	<p>for one of the estimators, I don't remember which</p> <p>one now. Is that typical, that somebody, a</p> <p>researcher like yourself, writes computer code to</p> <p>apply the estimator as reflected in a particular</p> <p>paper like the Turnbull paper? 02:24</p> <p>MS. XIDIS: Objection to form.</p> <p>A I'm actually not sure what you're asking.</p> <p>Q Okay. Well, I'm confused about what this code</p> <p>is that you wrote and posted on the Web page. What</p> <p>was it? 02:24</p> <p>A It was — everything that — all the work I</p> <p>did in analyzing the data was done in Stata, which</p> <p>is a software package that's used to work with data.</p> <p>And I used Stata to estimate the points, the</p> <p>probability points that you see on this graph, but 02:24</p> <p>Stata doesn't have an automatic procedure for</p> <p>estimating the area under that curve, the stair-step</p> <p>function. So I developed a very simple set of</p> <p>commands that would estimate the area under that</p> <p>curve. 02:25</p> <p>MR. DEIHL: Let's take a tape break. I'm</p> <p>sorry. Thank you.</p> <p>VIDEOGRAPHER: We are now off the record.</p> <p>The time is 2:21 p.m.</p> <p>(Following a short recess at 2:25 p.m., 02:25</p> <p>140</p>
<p>1 Turnbull estimator for any finite sample. Have you</p> <p>2 read Dr. Rausser's discussion that the ABERS</p> <p>3 estimate is biased consistently upward compared to</p> <p>4 the Turnbull estimator?</p> <p>5 A I have skimmed it, yes. 02:23</p> <p>6 Q Do you agree with the math underlying Dr.</p> <p>7 Rausser's opinion?</p> <p>8 A No, I do not.</p> <p>9 Q Why not?</p> <p>10 A If he's referring to the Turnbull model, 02:23</p> <p>11 Turnbull makes clear in the paper that — as I</p> <p>12 described earlier, the Turnbull addresses three</p> <p>13 classes of data. In Turnbull's paper, he makes</p> <p>14 clear that when you only have two classes of data,</p> <p>15 which are the two that we have, then his approach 02:23</p> <p>16 reduces to the ABERS model.</p> <p>17 Q In your opinion in this case, it doesn't make</p> <p>18 any difference which one of the two estimators you</p> <p>19 would use, you would reach the same result; correct?</p> <p>20 A The Turnbull or the ABERS? 02:23</p> <p>21 Q Yes.</p> <p>22 A The Turnbull is properly specified and the</p> <p>23 ABERS are equivalent.</p> <p>24 Q Now, when we're talking about using these</p> <p>25 estimators, you indicated that you had written code 02:24</p> <p>139</p>	<p>proceedings continued on the record at 2:36 p.m.)</p> <p>VIDEOGRAPHER: We are back on the record.</p> <p>The time is 2:32 p.m.</p> <p>Q (By Mr. Deihl) In your 2007 book, you invited</p> <p>Dr. Harrison to write a chapter on incentive 02:36</p> <p>compatibilities; isn't that right?</p> <p>A His opinion on incentive compatibility, yes.</p> <p>Q And incentive compatibility is a synonym for</p> <p>hypothetical bias; correct?</p> <p>A No. 02:36</p> <p>Q You read Dr. Harrison's draft before the book</p> <p>was published; isn't that right?</p> <p>A Yes.</p> <p>Q If you turn to Page 68, on the third full</p> <p>paragraph, at the end of that paragraph he writes, 02:38</p> <p>but there is no magic bullet procedure or question</p> <p>format that reliably produces the same results in</p> <p>hypothetical and real settings. Do you see that</p> <p>sentence?</p> <p>A Yes. 02:38</p> <p>Q Do you agree with that statement?</p> <p>A By magic bullet, I would assume what he's</p> <p>referring to here is one thing that you can do. A</p> <p>magic bullet usually refers to one thing, that you</p> <p>can do to make your survey reliable, and as we've 02:38</p> <p>141</p>

1 discussed several times this morning, there are
2 actually a number of things that you need to do, and
3 it requires experienced researchers to work over a
4 period of time through focus groups pretesting all
5 sorts of techniques that are involved in producing a 02:39
6 survey that is reliable and produces incentive
7 compatible results. So in that sense, I certainly
8 agree that there's no one magic bullet to produce
9 reliable results.

10 **Q So you'd agree with his statement?** 02:39

11 A Since he's referring to one magic bullet, I
12 agree that there is not one magic bullet.

13 **Q He actually states that there is no magic**
14 **bullet procedure or question format that reliably**
15 **produces the same results in hypothetical and real 02:39**
16 **settings. Do you agree with that statement?**

17 A I have told you what my interpretation is of
18 magic bullet, and procedure or question format still
19 refers to a -- he's saying is an example of a magic
20 bullet, and so I agree with the statement that 02:39
21 there's not one thing you can do to guarantee
22 reliability. I think there's a host of things that
23 need to be done, and I do think they were done in
24 this process.

25 **Q If you turn to Page 69, sort of the middle of 02:40**
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Q (By Mr. Deihl) What are you disputing in Dr. Harrison's statement?

A I'm sorry, I interrupted. Whenever someone
says you can't elicit anything meaningful, they're
overstating their claim because generally, data 02:42
always have something that can be meaningfully
elicited from them.

Q This was a chapter that appeared in the book
that you edited; correct?

A Yes. 02:43

Q So you edited this chapter, along with the
rest of that book; correct?

A Yes.

Q At the time you were editing it, you didn't
edit out the word anything, did you? Obviously you 02:43
didn't.

A When I edited this book, the stated purpose
that all authors were told was that they were to
provide their opinions on the topics they were
given, and, in fact, I was interested in producing a 02:43
book that provided opinion on a variety of topics
from a variety of perspectives. Lynn Harrison has
strong opinions about things. I do not agree with
them all. But I thought he would be an interesting
voice in the book. 02:43

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1 **the page, there's a paragraph that starts, another**
2 **open issue is scenario ambiguity; do you see that?**
3 **It's the second full paragraph on that page.**

4 A Yes.

5 **Q And he writes at the end of that paragraph, 02:40**
6 **again, the practical result is the inability to**
7 **claim that a CV study has reliably elicited anything**
8 **meaningful. Do you agree with that statement?**

9 A He has begun this paragraph by referring to
10 incredible or implausible scenarios. Within the 02:41
11 context of that discussion, his conclusion that if
12 you have an incredible or implausible scenario will
13 result in a CV study that may not be reliable is a
14 logical conclusion. Which studies he may be
15 referring to as having incredible or implausible 02:42
16 scenarios, I do not know. I am not familiar with
17 them -- with any.

18 **Q But hypothetically speaking, you'd agree with**
19 **him that if there is an incredible or an implausible**
20 **scenario, the result is the inability to claim that 02:42**
21 **a CV study has reliably elicited anything**
22 **meaningful?**

MS. XIDIS: Object to the form.

23 A I think he's overstated the claim. I do not
24 agree with the statement, no. 02:42
25

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Q Later in the chapter that Harrison wrote, he
reanalyzes the Carson, Krosnick, no vote study; do
you recall that?

A Yes.

Q Do you know what he concludes about the Noble 02:44
option?

A I do not remember what he concludes.

Q Would you take a look at Page 94. Do you have
that in front of you?

A Yes. 02:44

Q If you take a look at the second full
paragraph, Harrison writes, these results indicate
that for one of the most important survey referenda
ever mounted in the field of environmental
valuation, the inferences are very sensitive to how 02:44
one interprets responses, how have previous studies
interpreted these responses? Do you see that?

A Yes.

Q Do you agree with me that Dr. Harrison isn't
buying into the Carson, Krosnick no vote study? 02:45
MS. XIDIS: Objection to form.

A Yeah, I do not know what Dr. Harrison believes
or doesn't believe.

Q (By Mr. Deihl) Do you want to take a moment
and look at the article and -- 02:45

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1 A I don't think that would help me get into his
2 head as to what he believes and doesn't believe.
3 **Q What do you think of Dr. Harrison's analysis**
4 **as reflected on page 94 and in the section around**
5 **it? 02:45**
6 A I have no opinion on that right now. I would
7 have to read the entire chapter.
8 **Q Okay. This was published in a book that you**
9 **edited just back in 2006; right?**
10 A That's correct. 02:45
11 **Q You don't have any recollection of the point**
12 **behind Harrison's chapter?**
13 A I don't memorize the details of work that I
14 did three years ago, no.
15 **Q I'm not asking you to memorize it. I'm asking 02:46**
16 **you if you have an opinion -- I asked you whether or**
17 **not Dr. Harrison was buying into the Carson,**
18 **Krosnick no vote study, and you said you didn't have**
19 **an opinion about it, so I asked you if there was**
20 **something in this article that you could look at to 02:46**
21 **refresh your recollection about whether or not**
22 **Harrison has an opinion about that?**
23 A Short of reading the entire article, no.
24 **Q Did you make any attempt to convince the team,**
25 **the Stratus team, to use a no vote option in 02:46**
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1 **connection with this survey?**
2 A I was not part of the team when that decision
3 was made, so no.
4 **Q Did it concern you that a no vote option was**
5 **not included? 02:47**
6 A No, it didn't.
7 **Q What impact would of a no vote option had on**
8 **the results of the Stratus survey, in your opinion?**
9 A I do not know.
10 MS. XIDIS: Objection to form. 02:47
11 **Q (By Mr. Deihl) Would it have been important**
12 **to test the no vote option, in your opinion?**
13 MS. XIDIS: Objection to form.
14 A It might have been tested, I don't know.
15 **Q (By Mr. Deihl) Were you involved in selecting 02:47**
16 **a sample size for the main survey or the scope**
17 **survey?**
18 A No.
19 **Q Do you know who made the decision that the**
20 **sample size for the scope version would be 02:48**
21 **approximately half of the sample size of the base**
22 **version?**
23 A I think I was on a conference call when it was
24 discussed, but I do not know who made the decision.
25 **Q Did you have any input into that decision on 02:48**
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that conference call?
A I do not believe -- on that topic, I do not
believe I did.
Q Do you know who had input into that decision?
A No, I don't. 02:48
Q Do you recall anything about that discussion
on the conference call you referred to a minute ago?
A I'm sorry?
Q Do you recall anything about that discussion
on the conference call you referred to a minute ago? 02:49
A Could you be more specific, what you might be
looking for?
Q I'm trying to figure out who made the decision
that the sample size for the scope version would be
approximately half the sample size for the base 02:49
version. You said you didn't make that decision,
but you said you were on a conference call where it
was discussed. I'm asking you if you have any
recollection about what was discussed during that
conference call? 02:49
A No, I don't. I think it was a pretty quick
consensus. It may have just been presented to the
group by someone as I think we should do this, and
people said, that sounds -- there was just agreement
that that would be a good way to do it. 02:50
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Q Is there any support in the literature,
besides articles written by members of the Stratus
team, that support this unequal sample size?
A With regard to what?
Q With regard to the decision to have the sample 02:50
size for the scope version be half the sample size
for the base version?
A I'm not aware of any standards that have been
set in the literature for how scope tests are to be
done. My understanding is that the NOAA panel 02:50
guidelines recommended a split sample, which means
that you would ask the base and the scope question
in two different populations. You wouldn't have
both questions in one survey. You would split the
sample into two, which is what the team did. 02:50
The scope test, which is recommended by
the NOAA panel as part of their guidance is a test
that contingent valuation researchers do in order to
meet the standards the NOAA panel set out. It is
not otherwise -- that part of the survey is not used 02:51
for anything else but to comply with the scope
recommendation. So what you need to think about in
deciding how to split the sample is will you have
enough information in the scope sample to do a valid
scope test. There's no guidance or no intuition or 02:51
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39 (Pages 150 to 153)

1	A I'm sorry, I don't see where you are.				
2	Q At the top of Page 3, the last sentence before				
3	Chapter five starts; do you see that? It indicates				
4	the State may call Dr. Barbara Kanninen regarding				
5	survey bid design?	02:59			
6	A Yes.				
7	Q What do you intend to testify about regarding				
8	survey bid design?				
9	A I have had no discussions with the attorneys				
10	about testifying at all. I think this is here as an	02:59			
11	option for me to testify on that topic, but I				
12	haven't discussed it with anyone.				
13	Q What conclusions, if any, have you reached				
14	regarding the survey bid design in this survey?				
15	A I'm sorry?	02:59			
16	Q What conclusions, if any, have you reached				
17	regarding the survey bid design used in the Stratus				
18	survey?				
19	A Generally, once a survey is in the field and				
20	the data are collected, there's not much more to	03:00			
21	consider regarding the bid design, but to pat one's				
22	self on the back and say job well done or not, and I				
23	believe it was a job well done.				
24	Q What -- other than what we've talked about				
25	here today, is there any other involvement you had	03:00			
		154			
1	in the survey bid design for this survey?				
2	A I'm sorry, other than?				
3	Q We've had a lot of discussion today about bid				
4	design. I'm trying to find out if there's any other				
5	involvement you had in the survey bid design other	03:00			
6	than what you and I have already talked about here				
7	today?				
8	A I think we've probably covered it.				
9	Q Under chapter -- under the next chapter,				
10	Chapter 5, it says the state may call Dr. Kanninen	03:01			
11	to testify regarding income imputation. Have you				
12	had any discussion with plaintiffs' counsel about				
13	income imputation?				
14	A I'm sorry, have I discussed -- could you				
15	repeat that question?	03:01			
16	Q Have you discussed with plaintiffs' counsel				
17	testifying regarding income imputation?				
18	A I have not discussed testifying with regard to				
19	that with them.				
20	Q Have you talked to them about income	03:01			
21	imputation?				
22	A With counsel?				
23	Q Yes.				
24	A No.				
25	Q What involvement did you have in income	03:01			
		155			
	imputation in connection with the Stratus survey?				
	A I worked with Dr. Tourangeau, who's one of the				
	nation's leading experts on the topic of income				
	imputation, and we agreed upon a procedure for doing				
	the imputation, which is very common in surveys, so	03:02			
	that you can keep in the survey responses where				
	people didn't report income, and there are usually a				
	number of people who didn't. So he and I worked on				
	developing the procedure we wanted to use for income				
	imputation, and he obtained the census variables	03:02			
	that we would need to follow that procedure.				
	Q What were the procedures that you agreed on				
	with Dr. Tourangeau in doing the income imputation?				
	A We used what's called hot-deck procedure,				
	which is well established in the literature. And	03:02			
	the hot-deck procedure is a function of variables				
	that you can assign to the respondents to the				
	observations, and I believe we had four of them. I				
	can't tell you exactly what they were right now, but				
	I could look them up if you wanted to know what they	03:03			
	were.				
	Q Go ahead, I want to hear what you did with				
	income imputation. You don't need to look it up.				
	Is there anything else besides this hot-deck				
	procedure that you agreed with Dr. Tourangeau?	03:03			
		156			
	A No, we used the hot-deck procedure. That's				
	what income imputation is.				
	Q And you'd agree with me that Dr. Tourangeau is				
	the expert in the area of income imputation, I think				
	you characterized him as world leading expert or	03:03			
	something like that?				
	A He is -- he is a leading expert in the field				
	of survey methodology, one aspect of which is this				
	topic of income imputation.				
	Q Would you consider yourself an expert in	03:03			
	income imputation?				
	A How do you define expert?				
	Q Someone who has a background, experience,				
	education and expertise to qualify as able to				
	testify about income imputation?	03:04			
	A Yes.				
	Q Okay. What background and experience do you				
	have that would enable you to testify regarding				
	income imputation?				
	A I have, as we've discussed, an extensive	03:04			
	background in survey methodologies, specifically				
	contingent valuation and choice models, but as part				
	of that, I have worked a lot of with survey data,				
	which generally includes income variables. In				
	working with Dr. Tourangeau, I've read the relevant	03:04			
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41 (Pages 158 to 161)

typically about testing hypotheses.

Q Do you consider yourself to be an expert in both statistics and econometrics?

A Yes.

Q In Chapter 7 or with reference to Chapter 7 of the report, plaintiffs' counsel indicated that you may be called upon to testify regarding the estimate of the average value per household in Oklahoma for the contingent – continuing injuries to the Illinois River system. What portions of Chapter 7 are you qualified to testify about, in your opinion?

A All of it. I should say, with the caveat that obviously Dr. Tourangeau would be talking about, for example, the population number.

Q When you refer to the population number, you mean the number of citizens in Oklahoma?

A Excluding the counties that were excluded from the survey, yes.

Q Were you involved in writing sections of Chapter 6 of the report?

A I was involved with writing this chapter. I do not believe I wrote the first draft of it.

Q Tell me about the process that you went through, you and the other team members went through to write Chapter 6.

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A It was particularly typical as we got close to our deadline and we were all needing to access the same sections. The way the system works, only one person can edit at a time. So typically, if we knew that we wanted everyone to look at a chapter, like Chapter 6, we would often know in advance who might be working on it at a particular time, and then wait for that person to let us know when they were out so the next person could get in.

Q Who had access to the FTP site and had the ability to edit this survey document?

A The experts on the team, a few additional staff members at Stratus, and ultimately, I believe, a hired editor at the end of the process.

Q Who was the hired editor?

A I don't know.

Q Did the attorneys have access to the FTP site?

A I don't know.

Q Are you aware of any situations where the attorneys made edits to the report?

A I do not think they ever made edits to the version on the FTP site, though I may be wrong. I do know that we had a conference call where they had comments about the report, and as part of that, David or somebody made the changes that they

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A As I recall, Dr. Krosnick wrote the first draft, and several of us edited his draft, perhaps moved sections around and filled in tables, sort of an iterative procedure once the first draft was set.

Q How did that work? Was the first draft posted to an FTP site and then you could go in and check it out?

A Yes, that's correct.

Q Okay. So would each of you be able to go in and modify that draft?

A That's correct.

Q Did you discuss those modifications in phone calls with the other members of the team?

A It depended. Sometimes people would go in and edit it, leaving comments as to why they were making edits. At certain stages, I'm sure we had phone calls to discuss how to tighten the logic and the flow and make decisions about who was going to finalize the chapter. So it was a little of each.

Q I've seen some E-mail traffic where, you know, a particular expert would go into the FTP site and make changes to the site, and then E-mail the team, letting them know that changes had been made to a particular section or chapter on the – of the report. Was that typical?

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suggested when it was – when they were agreed upon.

Q Who were the attorneys that participated in that conference call?

A I can't say for sure. I know Ingrid was on it.

Q Anyone else?

A Many of the attorneys I haven't met so I have trouble remembering who was on which call since I don't identify them well.

Q Take a look at Page 6.2 of the Stratus report.

A Page 6.2?

Q Yes. Is it correct that Figure 6.1 – I'm sorry, let me ask it this way. Take a look at 6.3, actually, the following page. Is it your understanding that this Figure 6.1 is supposed to be a graphical illustration of Table 6.1?

A I believe that the point estimates in 6.1 represent the percentage votes in Table 6.1, and the confidence intervals should represent the confidence intervals represented in Table 6.1.

Q If you take a look at Table 6.1, it shows that the lower confidence interval for \$10 is 75.7 percent, and the upper confidence interval for \$45 is 77.8 percent; is that right?

A I'm sorry, could you repeat that?

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<p>1 Q Taking a look at Table 6.1, it shows that the 2 lower confidence interval for a \$10 bid is 75.7 3 percent, and the upper confidence interval for the 4 \$45 bid is 77.8 percent; correct? 5 A You're going down the line. Yes. 03:21 6 Q Okay. So that the upper confidence interval 7 at the \$45 bid amount overlaps the lower confidence 8 interval at the \$10 bid amount; right? 9 A The confidence intervals overlap, yes. 10 Q Yes. And if you'd turn to the next page, how 03:21 11 come the graph doesn't show the confidence intervals 12 overlapping? 13 A This graph was done in Excel, and I agree with 14 you the visual is not working. The confidence 15 intervals are not matching up with what is in the 03:22 16 table. It looks -- it looks like Excel does not do 17 a very good job of graphing data, I agree with you, 18 but the visual looks like the confidence intervals 19 don't overlap, and in the table they do, yes. 20 Q Do you know who prepared Figure 6.1? 03:23 21 A I do, yes. 22 Q Who did? 23 A A staff -- a staff member at Stratus, Inc, 24 Eric Horsch, H-O-R-S-C-H. 25 Q Dr. Kanninen, I've handed you what's been 03:24 166</p>	<p>structured, and how this would fit in. Q Did you discuss with Dr. Morey the information that's contained in this draft chapter? A I'm sure I discussed some of it with him, yes, not necessarily all of it. 03:27 Q If you look at the top of Page 1 of Exhibit 16, it says, schedule for week of November 3rd -- A Yes. Q -- do you see that? Is that your schedule for the week of November 3rd? 03:27 A No, it's not. Q Whose schedule is it? What's your understanding of that schedule? A I believe that was a schedule for Edward and the staff at Stratus. 03:28 Q And was the staff at Stratus working with Edward to draft this chapter? A I don't know if they were drafting the chapter. They were certainly working together. Q Did you have any input into the verbiage as 03:28 used in this draft chapter? A I don't believe so. Q Do you know whether any portion of this draft chapter made it into the final Stratus report? A It did not. 03:28 168</p>
<p>1 marked as Deposition Exhibit No. 16, which is a 2 draft of a chapter entitled Chapter 9; correct? 3 A Yes. 4 Q And this is something you drafted? 5 A No, it's not. 03:24 6 Q Okay. And who drafted this? 7 A I believe this was drafted by Edward Morey. 8 COURT REPORTER: Edward who? 9 A Morey, M-O-R-E-Y. 10 Q (By Mr. Deihl) This was in your considered by 03:26 11 materials. Did you review this draft? 12 A What do you mean by review? 13 Q Did you read it? 14 A Not necessarily all of it. 15 Q Did you read parts of it? 03:26 16 A Probably. 17 Q For what purpose did you read parts of it? 18 A For the purpose of thinking about how I might 19 contribute to the report. 20 Q Was the intent of the team that this chapter 03:26 21 would go into the final Stratus report? 22 A This is obviously a very early draft. You can 23 see the date at the top says, schedule for week of 24 November 3rd. I do not think at that point the team 25 had an intention for exactly how the report would be 03:27 167</p>	<p>Q Do you know why it didn't? A Because we decided not to have a Chapter 9, obviously, and the material that's presented in this draft is presented in other chapters of the report that were ultimately drafted from scratch by other 03:29 people. Q Did you discuss the information that's contained in this draft chapter with the team? A Did I? Q Yes. 03:29 A I would have to read the whole chapter to say whether I discussed something in here. We certainly were discussing aspects of the data in November, so I'm sure there's some overlap between what's in this chapter and what I might have been discussing with 03:29 people. Q Take a look at Section 9.6. That's a title to a section that reads, the sensitivity of the estimated LB mean and median as a function of their beliefs and expectations. What's your understanding 03:30 of what that's referring to? A Beliefs and expectations refers to the scenario debriefing questions that were asked following the questions in the survey. Q And what is the sensitivity of the 03:30 169</p>

<p>1 estimated — is that on lower bound mean? What is 2 that referring to?</p> <p>3 A I'm sure he's referring to lower bound mean.</p> <p>4 Q Okay. What's your understanding of what this 5 was going to reflect? 03:31</p> <p>6 A It appears, based on what's written after the 7 title, is that this section was planned to have a 8 series of tables, like the one in Section 9.62, that 9 presents lower bound mean and median estimates of 10 willingness to pay broken down by the different 03:32 11 categories that people might have chosen with 12 response to the scenario debriefing questions.</p> <p>13 Q So it's an outline of a proposed section that 14 would include willingness to pay estimates for a 15 variety of different subpopulations; correct? 03:32</p> <p>16 A It would include lower bound willingness to 17 pay estimates, yes.</p> <p>18 Q And among other topics, it included whether 19 the respondent expects to pay the stated cost more 20 than the stated cost or less than the stated cost; 03:32 21 correct?</p> <p>22 A That's correct.</p> <p>23 Q And it included how certain the respondent was 24 of his vote; correct?</p> <p>25 A That analysis wasn't done, but there was a 03:32 170</p>	<p>on a one-by-one basis. That's why in the final report, we decided that the appropriate way to present this information was with the construct validity model that presents this exact information in a way that I believe is the most informative and 03:34 the most intuitive, which is to show — which is to present a model that describes how people voted based on these factors, as well as others. And you can look at that model and determine which of these factors had an influence and whether it was 03:34 significant and whether it was positive or negative. The other reason is that I do not believe it is a standard in the literature to present willingness to pay for different subcategories, presumably for the reason that I stated in the first place, because 03:35 it's not an informative approach.</p> <p>Q Did you ever actually estimate these willing to pay numbers?</p> <p>A I did not, no.</p> <p>Q Did anyone on the team? 03:35</p> <p>A Are you asking about these numbers that are in this table?</p> <p>Q No. I'm asking about the various categories that I just read to you a few minutes ago.</p> <p>A Did I estimate willingness to pay for those 03:35 172</p>
<p>1 section on the topic, yes.</p> <p>2 Q And there was a section with the topic 3 regarding respondent's belief in the injury 4 scenario; correct?</p> <p>5 A Yes. 03:33</p> <p>6 Q There's a section regarding respondent's 7 belief in the cleanup program?</p> <p>8 A Yes.</p> <p>9 Q And there was a section on the respondent's 10 trust in the government and in the scientists; 03:33 11 right?</p> <p>12 A Yes.</p> <p>13 Q I have reviewed your report, and I don't 14 believe there are any willingness to pay estimates 15 for any of these subpopulations presented in the 03:33 16 Stratus report. Do you know why they were excluded 17 from the final report?</p> <p>18 A Two reasons that I can think of. The main one 19 being, as we discussed much earlier in the day, when 20 you look at decisions or responses that people give 03:34 21 with respect to only one factor, you can really draw 22 no conclusions from a table like that. People make 23 decisions based on a variety of factors and a large 24 number of factors, all of which work jointly and in 25 ways that well we can't fully tease out and look at 03:34 171</p>	<p>categories?</p> <p>Q Or those subpopulations?</p> <p>A No, I did not.</p> <p>Q Did anyone on the team estimate willingness to pay for those subpopulations? 03:35</p> <p>A I do not believe so.</p> <p>MR. DEIHL: I think we need a tape change. VIDEOGRAPHER: We are now off the record. The time is 3:32 p.m. (Following a short recess at 3:35 p.m., 03:36 proceedings continued on the record at 3:46 p.m.) VIDEOGRAPHER: We are now back on the record. The time is 3:42 p.m.</p> <p>Q (By Mr. Deihl) Dr. Kanninen, it's true, is it not, that certain of the respondents thought that 03:46 other lakes and rivers would be cleaned up in addition to Tenkiller Lake and the Illinois River?</p> <p>MS. XIDIS: Objection to form.</p> <p>A I'm sorry, could you repeat the question?</p> <p>Q (By Mr. Deihl) It's true, is it not, that 03:46 respondents thought that other lakes and rivers would be cleaned up in addition to the Illinois River and Tenkiller Lake?</p> <p>A Some respondents, when asked, stated that they thought that, not respondents or all respondents. 03:47 173</p>

<p>1 Q About 40 percent of the respondents said that 2 they had voted for the Allen program because the tax 3 dollars would be used to clean up other rivers and 4 lakes in addition to the Illinois River and 5 Tenkiller Lake; right? 03:47 6 MS. XIDIS: Objection to form. 7 A And that does not sound correct. 8 Q (By Mr. Deihl) Can you look in the report and 9 tell me what the number is? 10 A What — 03:47 11 Q Do you need the base survey materials? 12 A I'm not sure we have a table on what you're 13 asking about. Could you repeat the question? 14 Q Let me ask a different question. I think you 15 testified that some of the respondents voted for the 03:49 16 Allen program because the tax dollars — because 17 they thought the tax dollars would be used to clean 18 up other rivers and lakes in addition to Tenkiller 19 and the Illinois River; right? 20 A That's incorrect. 03:49 21 Q Okay. 22 A That's incorrect. 23 Q I understood your answer. Did any of the 24 respondents say they voted for the Allen program 25 because they thought the tax dollars would be used 03:49 174</p>	<p>analysis that you did? A As I stated before the break, people have a large number of factors that they use to form their judgments and make their decisions. And the question you're referring to is one factor that 03:51 might have affected their vote, and, in fact, we found in our construct validity model that it did affect their vote. We also found that a number of other factors affected their vote, and one of the 03:51 analyses we did was to look at what might have happened had everybody believed what the exact scenario described, and if that had been the case, that everybody believed what the exact scenario described, including these people and the other lakes and rivers, then the willingness to pay 03:51 estimate that we derived would actually have been higher than the one that we estimated. Q Where did you do that analysis that you just referred to? A It is in one of the appendices. Do you want 03:52 me to tell you which one? Q Yes. A Well, I can get it from the table of contents. It's Appendix G. Q I'll hand you a copy of — I think it was 03:52 176</p>
<p>1 to clean up other rivers and lakes? 2 A I would have to look at their verbatim 3 responses to see if anybody explained their vote 4 with that reason. I don't specifically recall 5 anybody stating that as a reason for why they voted 03:50 6 the way they did. 7 Q Did the survey responses indicate that some of 8 the respondents believed that voting for the Allen 9 program would result in clean up of other lakes in 10 addition to Tenkiller Lake and the Illinois River? 03:50 11 A There was a debriefing question where people 12 were asked about that particular potential belief, 13 and there were people who said yes, they thought it 14 would involve other lakes and rivers. 15 Q Did you — 03:50 16 A But, excuse me, but we didn't ask them if that 17 was an explanation for their vote, nor did they 18 state, as far as I know, that that was an 19 explanation for their vote. 20 Q You didn't ask them one way or another; 03:50 21 correct? 22 A We didn't, and that's what you were suggesting 23 with your question, so I wanted to make sure — make 24 that clear. 25 Q Did you eliminate those people from the 03:50 175</p>	<p>marked as an exhibit — I think it's Appendix E in the notebook. Why don't I take a look at that. Here it is. I've got it. Dr. Kaoninen, let me show you what was previously marked as Exhibit 11 in Dr. Tourangeau's deposition, which contains Appendix G. 03:53 You can show me what you were just talking about in your last answer. A You want me to layout the background of what I was describing? Q Yes, please. 03:54 A In Table G-1, you will see the bid amounts that you're used to seeing. You will see the ABERS estimates for the percentage votes in the first column after that, which, again, is a table you've seen already. In two columns over, the one titled 03:54 proportion of votes adjusted for scenario acceptance and certainty, those are the predicted vote percentages that would have resulted had we used our construct validity model with a certainty variable in it, and adjusted for any responses where people 03:54 did not accord with the actual scenario in some way, and adjusted their — adjusted those factors so that they do accord with the full scenario, and we adjusted for certainty, and you get these predicted vote responses in that column. Those, as you can 03:55 177</p>

<p>1 see, are on average higher than the actual vote 2 responses. And if you estimate the ABERS model with 3 those responses, you will get an estimate for 4 willingness to pay that is higher than the estimate 5 that we present as our final and best estimate. So 03:55 6 had we adjusted for people's different beliefs about 7 the scenario, we would have, in fact, obtained a 8 higher willingness to pay estimate than what we did 9 obtain.</p> <p>10 Q In this chapter or in this appendix, Appendix 03:55 11 G, the adjustments that you made are listed on Page 12 G-2; is that correct? Are those the factors that 13 you adjusted for?</p> <p>14 A Yes.</p> <p>15 Q Who prepared Appendix G? 03:56</p> <p>16 A I believe it was mostly me.</p> <p>17 Q Anyone else?</p> <p>18 A I apologize, Michael Hanemann and Dr. Krosnick 19 probably did the writing in this chapter.</p> <p>20 Q Okay. 03:56</p> <p>21 A In this appendix.</p> <p>22 Q So it was Dr. Hanemann and Dr. Krosnick that 23 prepared this?</p> <p>24 A Yes.</p> <p>25 Q This sensitivity analysis that you have in 03:57 178</p>	<p>respondents who were slightly sure or not at all sure of their response and changed their vote, whether yes or no, to a no.</p> <p>Q Isn't that sensitivity analysis meaningless 03:59 because it changes the data to get more consistent responses than you actually got?</p> <p>MS. XIDIS: Objection to the form.</p> <p>A I'm not sure what you mean by consistent responses.</p> <p>Q (By Mr. Deihl) Well, there were respondents 03:59 who weren't at all sure of their vote, and you changed them to a no vote. Doesn't that create a more a consistent response?</p> <p>A Consistent in what way? I just don't know what you mean by that term. 04:00</p> <p>Q Why didn't you change the person's vote to 04:00 match their opinions? So, for example, if a respondent said he was not at all sure of his vote and voted yes, why didn't you change his vote to reflect his opinions regarding whether or not he thought he was cleaning up the lake?</p> <p>MS. XIDIS: Objection to form.</p> <p>A I'm sorry, could I ask you to repeat that one more time?</p> <p>Q (By Mr. Deihl) Sure let me try again. Let me 04:01 180</p>
<p>1 Appendix G, my understanding is of it where the 2 underlying respondent data were altered to remove 3 uncertainty or to remove lack of scenario acceptance 4 and to remove lack of respondent comprehension, for 5 example, if the respondent said he was not at all 03:58 6 sure of his vote, the sensitivity analysis changed 7 the data of the respondent to reflect that he was 8 sure of his vote; is that correct?</p> <p>MS. XIDIS: Objection to form.</p> <p>10 A Could you tell me where you're reading that 03:58 11 from?</p> <p>12 Q (By Mr. Deihl) I'm asking you what you did in 13 this sensitivity analysis to a respondent who told 14 you that he was not at all sure of his vote.</p> <p>15 A Okay. There were three — this appendix 03:58 16 presents three different sensitivity analyses/.</p> <p>17 Q Okay.</p> <p>18 A Which one are you asking about?</p> <p>19 Q I'm asking about the sensitivity analysis 20 where you adjusted a respondent if he said he was 03:58 21 not sure of his vote.</p> <p>22 A And your question is?</p> <p>23 Q What did you do to adjust that respondent's 24 answer?</p> <p>25 A For sensitivity purposes, this analysis took 03:59 179</p>	<p>try to understand what you were doing here. Earlier you stated that you accepted the data as it was provided to you by the citizens, the respondents in the state of Oklahoma. That you couldn't look into their minds and figure out why they voted the way 04:01 they voted, you had to accept their votes. Why did you go through this sensitivity analysis and actually change people's votes?</p> <p>MS. XIDIS: Objection to form.</p> <p>A By definition, this is a sensitivity analysis, 04:01 which is intended to look at how willingness to pay might change if you had made other assumptions about your confidence in people's responses. Obviously, by having this in the appendix, this was not an estimation procedure that we were using to estimate 04:02 willingness to pay for actual use, but it's an analysis to look at how it might change if we had made some assumptions that are fairly severe, changing people to no votes when, in fact, they said yes they would pay something, is an extraordinary 04:02 thing to do. But as I said, it's something we did to — for sensitivity analysis purposes only.</p> <p>Q (By Mr. Deihl) Dr. Kanninen, I've handed you what's been marked as Deposition Exhibit No. 17. Can you identify this document? 04:03 181</p>

<p>1 A This is a paper written by me and Bengt 2 Kristrom, and it's published in Land Economics, 3 1993.</p> <p>4 Q What's the -- what's this paper about?</p> <p>5 A Essentially, this paper was written to refute 04:04 6 the concept that some other researchers had 7 suggested in the literature, where they thought that 8 bid values could somehow affect estimates for 9 willingness to pay, and this paper shows that bid 10 values, when estimating parametric models, do not 04:05 11 affect the estimates for willingness to pay.</p> <p>12 Q If you take a look on Page 199 of your 13 article, in the second full paragraph you state, 14 indeed these results should serve as a warning for 15 DC CVM researchers. The bid values in the tails of 04:05 16 the distribution are highly influential points, not 17 in a reliable way, as Cooper and Loomis suggest, but 18 rather in a distorting way. Bid values in the tails 19 increase the variances of the estimators of the 20 parameters and therefore of willingness to pay; do 04:06 21 you see that?</p> <p>22 A Yes.</p> <p>23 Q In this study, you have more than 30 percent 24 of the respondents saying yes to the top bid; right? 25 When I say in this study, I mean in the Stratus 04:06 182</p>	<p>Monte Carlo approach?</p> <p>A Yes.</p> <p>Q You wrote, as an example, Cooper and Loomis report that 25 percent of the respondents accepted a bid offer of \$1,200 to double their probability of 04:08 bagging a four point buck. We expect this acceptance might be abnormally high. Why did you think that acceptance was abnormally high?</p> <p>A The Cooper and Loomis paper estimated either a Logit model or a log-Logit model. I probably say in 04:09 the paper somewhere, but I can't find it upon skimming it. And what they report in their paper is that essentially -- my conclusion from what they report in their paper is that that response, at \$1,200, the 25 percent response, is pulling their 04:09 distribution up. In other words, they have a poorly fitting model. So what we're saying here is that what Cooper and Loomis think is going on with their model is in fact wrong. What they're basically finding -- what they've basically found is that 04:09 their model is not fitting their data very well, and their best approach from there would be to fit a different model.</p> <p>Q Can you identify this Deposition Exhibit, please? 04:10 184</p>
<p>1 survey.</p> <p>2 A Oh. Yes.</p> <p>3 Q In connection with the Stratus survey, based 4 on the statement in your 1993 article, does the 30 04:06 5 percent number of respondents who said yes at the 6 top bid level artificially increase willingness to 7 pay?</p> <p>8 A I'm not sure how you interpreted that from 9 what you read to me.</p> <p>10 Q Okay. Is the 30 percent number of respondents 04:07 11 in the Stratus survey who say yes, are they in the 12 tail?</p> <p>13 A No.</p> <p>14 Q Are any of them in the tail?</p> <p>15 A By definition, 5 percent of people are in the 04:07 16 top 50th percentile of people with the highest 17 willingness to pay values, but that's a different 18 concept than the question of where is the bid being 19 asked and where does that lie along the willingness 20 to pay distribution. We didn't pursue where is that 04:07 21 5 percent tail. In the Stratus study, the top bid 22 is at 30 percent, and by definition, 30 percent is 23 not the tails of the distribution.</p> <p>24 Q Okay. If you take a look on Page 200 of this 25 1993 report, right above the section that says, a 04:08 183</p>	<p>A These are random handwritten notes I took over the course of the project.</p> <p>Q Are all the notes in Deposition Exhibit No. 18 your notes?</p> <p>A Meaning notes that I wrote myself? 04:11</p> <p>Q Yes.</p> <p>A I don't believe so, no.</p> <p>Q Identify for me which ones of these notes are not your handwriting.</p> <p>A I believe that the last page is not my 04:12 handwriting.</p> <p>Q Do you know whose handwriting the last page is?</p> <p>A No, I don't.</p> <p>Q On the fifth page of your notes, the top of 04:12 the page is a note that says, look for yea-sayers, people who said everything is important. Do you see that?</p> <p>A Yes.</p> <p>Q How did you go about looking for yea-sayers? 04:13</p> <p>A This is a different form of yea-sayers from what we were talking about earlier. This was a concept that Roger Tourangeau raised about people who might, in response to certain questions in the survey, and I don't remember which ones he was 04:13 185</p>

<p>1 referring to, would basically respond yes to, as I</p> <p>2 said, certain things in the survey.</p> <p>3 Q So this is a different type of yea-sayer than</p> <p>4 the yea-sayer we talked about in the previous</p> <p>5 article? 04:13</p> <p>6 A Yes.</p> <p>7 Q Okay. What is the definition of this kind of</p> <p>8 yea-sayer?</p> <p>9 A You would have to ask Dr. Tourangeau.</p> <p>10 Q Okay. So this isn't your definition of 04:14</p> <p>11 yea-sayer?</p> <p>12 A These are notes that I took, presumably at</p> <p>13 this point I was talking to Dr. Tourangeau.</p> <p>14 Q Okay. Is there an industry – industry, is</p> <p>15 there an understanding in the literature about what 04:14</p> <p>16 yea-saying means?</p> <p>17 A Dr. Tourangeau is a survey methodologist, and</p> <p>18 I believe there is an understanding in that</p> <p>19 literature of what a term yea-saying might mean, but</p> <p>20 I cannot provide it to you right now. 04:14</p> <p>21 Q What is the error rate for the Stratus survey?</p> <p>22 A I'm sorry?</p> <p>23 Q The error rate?</p> <p>24 A The error rate?</p> <p>25 Q Yes. 04:14</p> <p style="text-align: center;">186</p>	<p>A At this point, it is almost exactly a hundred</p> <p>thousand dollars.</p> <p>Q Does that include your time here today?</p> <p>A I think – I don't know.</p> <p>Q How much have you been paid in connection with 04:21</p> <p>the other Stratus matter that you indicated you are</p> <p>working on?</p> <p>A Probably about \$4,000.</p> <p>Q How many hours have you spent in connection</p> <p>with this matter, approximately? 04:22</p> <p>A I think, doing the math, it would be 500</p> <p>hours.</p> <p>Q We talked a moment ago about yea-saying, and</p> <p>you indicated that in your conversation with Dr.</p> <p>Tourangeau, he was referring to a different kind of 04:22</p> <p>yea-saying than you had been referring to in your</p> <p>1995 article. Define for me what yea-saying meant</p> <p>to you when you were talking about it in your</p> <p>earlier article.</p> <p>A I don't think I can go back and get into the 04:22</p> <p>mind-set I was in in 1995. I'm unable to do that.</p> <p>Q Sitting here today, what do you understand</p> <p>yea-saying to mean?</p> <p>A As I said, I think it's kind of a passe–</p> <p>passe concept at this point. I don't know if 04:23</p> <p style="text-align: center;">188</p>
<p>1 A I'm not sure what you're referring to.</p> <p>2 Q Do you know what an error rate is?</p> <p>3 A With respect to?</p> <p>4 Q With respect to statistical analyses of the</p> <p>5 type that's reflected in the Stratus survey? 04:15</p> <p>6 A I'm sorry, I don't understand what you're</p> <p>7 asking.</p> <p>8 Q You don't. Okay. Do you have an</p> <p>9 understanding of what error rate means, just</p> <p>10 generally? 04:15</p> <p>11 A I know what errors are.</p> <p>12 Q Okay.</p> <p>13 A I don't use the term error rate, I don't</p> <p>14 think.</p> <p>15 MR. DEIHL: Let me take a couple of 04:15</p> <p>16 moments and I think I'm finished.</p> <p>17 VIDEOGRAPHER: We are now off the record.</p> <p>18 The time is 4:11 p.m.</p> <p>19 (Following a short recess at 4:15 p.m.,</p> <p>20 proceedings continued on the record at 4:21 p.m.) 04:15</p> <p>21 VIDEOGRAPHER: We're back on the record</p> <p>22 the time is 4:17 p.m.</p> <p>23 Q (By Mr. Deihl) Dr. Kanninen, how much have</p> <p>24 you been paid in connection with your work on this</p> <p>25 project? 04:21</p> <p style="text-align: center;">187</p>	<p>there's a standard definition in the literature.</p> <p>Q What did you understand Dr. Tourangeau to mean</p> <p>by yea-saying in the conversation you had with him</p> <p>last fall?</p> <p>A He was interested in looking at people who say 04:23</p> <p>yes to a lot of a certain type of question. I think</p> <p>he was interested in seeing what the number was. I</p> <p>don't think yea-saying in survey methodology is a</p> <p>good thing or a bad thing, it is a type of person.</p> <p>Q So there are people who are yea-sayers? 04:23</p> <p>A You would have to ask him. I don't know.</p> <p>Q So your understanding in your conversation</p> <p>with him is he was looking for a type of person who</p> <p>says yes to everything; is that correct?</p> <p>A He might have been interested in learning more 04:24</p> <p>about that subset of people, but I don't know.</p> <p>Q Now, you wrote an article about yea-saying not</p> <p>too long ago, and you can't remember what you</p> <p>understood the meaning of yea-saying was in that</p> <p>article? 04:24</p> <p>A Are you referring to my 1995 article?</p> <p>Q Yes.</p> <p>A I defined the concept econometrically in that</p> <p>article.</p> <p>Q How did you define it? 04:24</p> <p style="text-align: center;">189</p>

1	A I would have to pull out the article again and		that scientists have measured how much phosphorus	
2	explain it to you.		comes into the river and lake from different	
3	Q Why don't you take a look.		sources, and they have found that about 60 percent	
4	A It's that one. I defined the concept in terms		of the phosphorus in the river and lake is from	
5	of the double mounted model, which is not the type	04:25	chickens and turkeys, the other 40 percent comes	04:29
6	of data that we collected in the Stratus study. In		from sewage treatment plants, fertilizers bought in	
7	this model, I considered people who — I added a		stores and other sources. How come you didn't	
8	term, a fixed term to the probability of a person		multiply the \$184.55 number by the 60 percent that	
9	saying yes to both the initial bid and the follow-up		comes from turkey and chicken production?	
10	bid.	04:26	A What it says at the beginning of this section	04:29
11	Q Where are you referring to in your article?		is, a conserv — as stated above a conservative	
12	A Page 122.		estimate of the average willingness to pay value	
13	Q And where does it indicate how you've defined		placed by a household in the study area on the	
14	yea-saying?		injuries resulting from continuing pollution of the	
15	A The very first sentence.	04:26	Illinois River system and Tenkiller Lake is \$184.55	04:29
16	Q So the sentence that reads, essentially this		per household. The program that was valued didn't	
17	specification assumes that there is a probability Y		imply that people were only going to get a program	
18	that an individual will respond yes yes to any set		that cleaned up a certain proportion of the	
19	of bid offers?		pollution. The program was to clean up the	
20	A That's a gamma.	04:26	pollution.	04:30
21	Q Okay. Thank you.		Q Okay.	
22	A Yes.		A And that's what people stated they would pay.	
23	Q There's a probability gamma that an individual		Q Okay. So that's a cost per household to clean	
24	will respond yes yes to any set of bid offers; is		up all of the pollution, the 60 percent derived from	
25	that correct?	04:27	the poultry industry and the 40 percent derived from	04:30
	190		192	
1	A Yes.		these other sources; correct.	
2	Q And that's what you have defined as yea-saying		MS. XIDIS: Objection to form.	
3	in this paper?		A I haven't thought about it in those terms. I	
4	A Yes. It's, in fact, impossible to define		can't answer your question.	
5	yea-saying in a single mounted format, which is the	04:27	Q (By Mr. Deihl) Okay.	04:30
6	type of data that we collected in this study.		MR. DEIHL: I don't think I have any	
7	Q Okay. You indicated that you're prepared to		further questions. Thank you.	
8	testify about Chapter 7 of the report, and that you		MR. MIRKES: I have no questions.	
9	believe you're qualified to testify about all of		MR. JONES: I have no questions.	
10	Chapter 7 of the report; correct?	04:27	MR. FREEMAN: Nothing from me today.	04:30
11	MS. XIDIS: Objection to form.		MR. TRIPLETT: Nothing.	
12	A Except for the number of households figured.		MS. XIDIS: Anybody left on the phone or	
13	Q (By Mr. Deihl) Just so I understand what you		are they gone?	
14	did in Section 7.2, my understanding is that you		MR. DEIHL: Is anybody on the phone?	
15	took the willingness to pay number of 184.55 per	04:28	MS. TUCKER: This is K.C. I'm still on	04:31
16	household, and you multiplied it by 1,352 —		the phone. I don't have any questions. Thank you.	
17	1,352,878 households; is that correct?		MR. DEIHL: I think we're done.	
18	A That's correct.		VIDEOGRAPHER: This concludes the	
19	Q How did you arrive at the \$184.55 per		deposition. We are now off the record. The time is	
20	household number? Is that your willingness to pay	04:28	4:27 p.m.	04:31
21	number that came out of the Stratus survey?		(Whereupon, the deposition was concluded at	
22	A That is the lower bound estimate that — ABERS		4:31 p.m.)	
23	estimate that comes from the survey data, yes.			
24	Q Now, you told the survey or you, being the			
25	Stratus survey team, told the survey respondents	04:28		
	191		193	

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	<p>I, Barbara Kanninen, Ph.D., do hereby certify that the foregoing deposition was presented to me by Karla E. Barrow as a true and correct transcript of the proceedings in the above styled and numbered cause, and I now sign the same as true 04:31 and correct.</p> <p>WITNESS my hand this _____ day of _____, 2009.</p> <p>04:31</p> <p>_____ BARBARA KANNINEN, Ph.D.</p> <p>04:31</p> <p>SUBSCRIBED AND SWORN TO before me this 04:31 _____ day of _____, 2009.</p> <p>_____ Notary Public 04:31</p> <p>My Commission Expires: _____</p> <p>04:31 194</p>	<p>BARBARA KANNINEN Ph.D., 4-28-09</p> <p>CORRECTIONS TO THE DEPOSITION OF BARBARA KANNINEN, Ph.D.</p> <p>PAGE AND LINE NUMBER CORRECTION</p> <p>04:31</p> <p>04:31</p> <p>TULSA FREELANCE REPORTERS 918-587-2878 196</p>
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	<p>CERTIFICATE</p> <p>STATE OF OKLAHOMA)) ss. COUNTY OF TULSA)</p> <p>I, Karla E. Barrow, Certified Shorthand 04:31 Reporter within and for Tulsa County, State of Oklahoma, do hereby certify that the above named witness was by me first duly sworn to testify to the truth, the whole truth and nothing but the truth in the case aforesaid, and that I reported in 04:31 stenograph her deposition; that my stenograph notes were thereafter transcribed and reduced to typewritten form under my supervision, as the same appears herein.</p> <p>I further certify that the foregoing 194 04:31 pages contain a full, true and correct transcript of the deposition taken at such time and place.</p> <p>I further certify that I am not attorney for or relative to either of said parties, or otherwise interested in the event of said action. 04:31</p> <p>WITNESS MY HAND this _____ day of May, 2009.</p> <p>KARLA E. BARROW, CSR CSR No. 00113</p> <p>195</p>	

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abandon 135:15,17 ABERS 51:2 83:25 87:3,5 89:10 132:18 133:17 135:25 136:3,5,8,13,16 138:16,18 138:24 139:2,16,20,23 177:12 178:2 191:22 ability 158:2 164:11 able 33:16 123:11 150:3 157:14 163:9 abnormally 184:7,8 abridged 158:20 academic 18:13 accept 153:15 181:6 acceptance 177:16 179:3 184:7,8 accepted 132:16 181:2 184:4 access 123:11 135:11 164:2 164:10,17 accomplish 23:24 accord 177:21,23 accounting 120:3 accurate 17:12 96:18 Act 16:22 action 195:20 actual 45:3,7 60:19 69:3 76:12 82:2 101:2 124:18 177:21 178:1 181:16 added 190:7 adding 138:14 addition 159:4 173:17,22 174:4,18 175:10 additional 164:12 address 5:10,12,13,19 35:7 104:13,16 109:1 117:3 addressed 108:16 117:6 addresses 5:9,20 139:12 adjust 105:24 179:23 adjusted 177:16,20,22,22,24 178:6,13 179:20 adjustments 178:11 administering 11:18 93:21	93:24 94:5 administration 13:5 14:9 advance 164:6 advantages 136:17 advisor 9:4,8 advisors 9:5 affect 28:8 77:23 78:20 79:9 80:1,3 81:11 135:19 151:10 151:20,22 176:8 182:8,11 aforesaid 195:10 ago 9:14 113:7 146:14 148:7 148:10 150:16 172:24 188:13 189:18 agree 104:7 107:16 111:5 139:6 141:21 142:8,10,12 142:16,20 143:8,18,25 144:23 145:19 157:3 166:13 166:17 agreed 55:15 156:4,12,25 165:1 agreement 148:24 ahead 35:11 156:22 al 1:10 Alberini 19:4 algebraically 86:21 Allen 174:2,16,24 175:8 allocation 46:16,20,22,25 allowed 96:22 allows 18:10 altered 179:2 ambiguity 143:2 Amenities 9:22 amount 44:9 52:19 53:5 54:11 62:4,8,12 68:18 72:1 73:8 81:5,7 109:17 121:18 122:14,21 126:11 132:2,7 132:14,16 166:7,8 amounts 47:3,5 54:19 81:1 94:8 122:5,8,10 132:10 177:11 analyses 52:19 54:11 128:12 128:14,16 176:10 179:16	187:4 analysis 10:16 11:21 13:9 14:18 121:17 124:2 130:25 131:2 133:18 134:3 135:10 146:3 160:21 170:25 176:1 176:18 178:25 179:6,13,19 179:25 180:4 181:7,10,17 181:22 Analytics 2:24 4:17 analyze 63:18 analyzing 118:17,21 140:12 ANDERSON 2:25 and/or 161:15 Anna 19:4 annual 57:6 158:24 anomaly 101:8 answer 7:15 25:17 35:11 36:20 37:2,14 38:2,3 65:9 65:19 66:18,20 67:5,21 68:5 73:10,19 79:17,19 84:8 88:23,25 106:1 110:8 113:6 151:24 174:23 177:7 179:24 193:4 answered 36:23 64:1 72:5 75:14 87:16 89:4 answers 7:11 Antonio 34:15 35:20,20,23 36:3,6 53:20 54:22 anybody 71:2 85:24 175:3,5 193:12,14 anyway 152:20 apologize 9:13 11:7 178:18 Apparently 32:3 appeared 33:13 59:23 144:8 appears 24:17 28:24 31:25 32:10,15,19 54:15,16,19 170:6 195:14 append 54:15 appended 51:20 appendices 176:20 appendix 176:24 177:1,5 178:10,10,15,21 179:1,15

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